Scientific American.

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RAIL-ROAD NEWS.

Liability of Railroad Companies.

Patrick Cass recently recovered a verdict of $100 and costs against the New York and New Haven Railroad Company, being the value of the baggage, placed in possession of the baggage-keeper, in June last, but not delivered. The ticket, a check received for it, had been lost, and the agent refused to deliver it when it was demanded, and it was subsequently lost. The court held that, in common law, the Railroad Company is liable for the loss of baggage entrusted to their care; and the giving a check to a passenger designating the number of the baggage, was intended to furnish the passenger with additional security; and the loss of a check does not relieve the company from liability, unless some other person presents the check, and in good faith and without notice the baggage is delivered to the party so offering the check. Nothing of the kind was shown here, and the plaintiff was entitled to the judgment.

The Central Railroad.

Seven additional miles of the Pennsylvania Central Railroad were opened on the 1st inst. It is the first section of the mountain division, and avoids the most serious obstructions on the Portage Road. The unfinished portion of the road is proceeding rapidly towards completion. In its present unfinished state, we see that the total receipts for March last exhibit an increase over the same month in the year previous of over one hundred and seventy-three thousand dollars.

Shipping Intelligence.

The New York Herald says that the number of vessels built during the past year, in New York city alone, amounted to 60—namely, 18 steamers, 25 ships, 2 brigs, 13 schooners and 2 sloops; the first two classes averaging considerably over 1,000 tons burthen. The whole tonnage of the port of New York is about 900,000 tons. From the first of Janury, 1851, to the 1st of January, 1852, the number of vessels which entered this port was 3,888, of which 2,381 were American, of the aggregate burthen of 2,381 tons.—The number of passengers brought in these vessels, from foreign ports, was 299,081. The daily arrival at the port of New York nearly double those at any other port in the Union, or, indeed, in the world, excepting probably, Liverpool and London.

The commerce of the United States has nearly doubled within the past ten years; and we are now, after a national existence of but seventy-seven years, the first maritime nation in the world. Such a rapid increase is unparalleled since the early Grecian navigators launched their first bark on the waters of the Archipelago. And in the knowledge of such a flattering testimony of enterprise, we may be excused for feeling, and also expressing, the exultation that every well-wisher of his country must entertain, that the United States, while yet in its infancy, has so far outstripped all competitors for supremacy in such a noble and humanizing pursuit.

IMPROVED COUPLING FOR PIPES AND OTHER PURPOSES.

Figure 1. Figure 2.

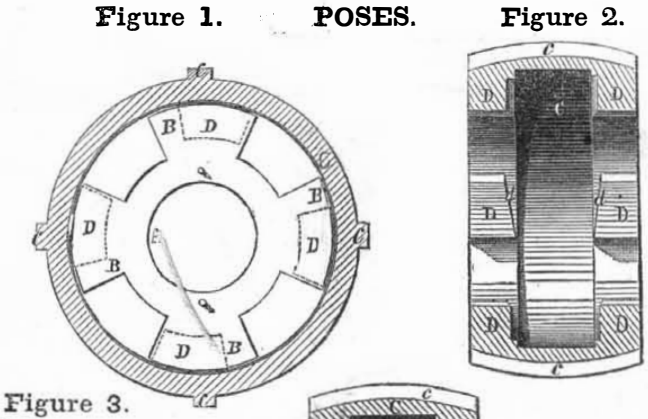
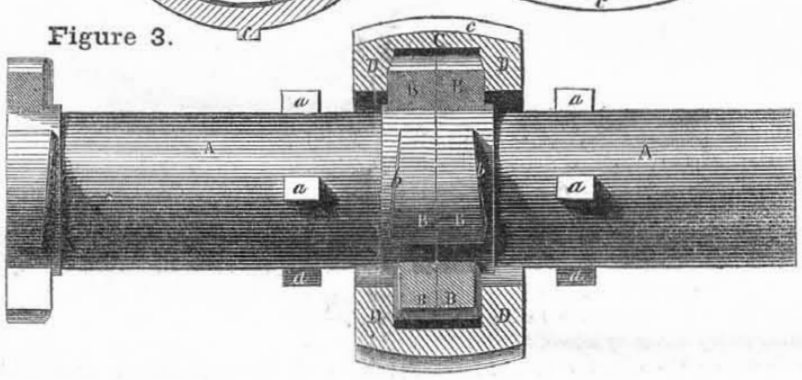


Figure 3.



The accompanying engravings represent the improvements in Hose Coupling invented by C. W. Grannis, of Gowanda, Erie Co., N. Y., who has taken measures to secure a patent for the same.

Fig. 1 is a section of the coupling ring; fig. 2 is a section through the middle of the coupling, and fig. 3 is a view of two joints of pipe connected with the coupling in section. The same letters refer to like parts.

A A are two joints of pipe, B B represent their segmental projections, of which there are four at equal distances apart; their inclined or screw form is shown in fig. 3, where it will be seen that those of the two ends which come together have their inclines, *b b*, in opposite directions. The segments on each joint are placed opposite to one another, and one end of every joint is furnished with two small pins, which fit into corresponding holes in the end of the next one, to keep them in place. C is the collar or coupling ring, which is just large enough inside to pass easily over the outside of the projections, B B; its inner projections, D D, are at equal distances apart, and opposite one another, and have their inclines, *d d*, in opposite directions, each opposite pair being just far enough apart to receive the projections, B B, between them. The joints of pipe, A A, are each furnished with a number of tabs, *a a*, to receive a wrench, and the coupling ring, C, is also furnished with tabs, *c c*, for the same purpose.

To couple the joints together, all that is required is to bring their segmental projections opposite each other, then to bring the projections, *d d*, on the inside of the ring opposite the spaces between those, *b b*, on the joints, and pass the collar along until it is in its proper longitudinal position, and then turn the collar so as to make each two of its projections clamp two of those on the pipe. It is only necessary to turn the collar a very short distance before its screw action clamps the ends of the pipe joints close together. By placing a piece of leather, india rubber, or other suitable material, between the ends, a perfectly tight joint may be made.

For pipes and rods which work in the direction of their length, no further means of security is required, but for shafting which revolves, a key should be inserted longitudinally between the projections, to keep the collar from turning back, care being taken in making the sides of the projections so that the key will draw the collar in the required direction to tighten the joint. The chief advantage in this coupling is the quickness with which it couples and uncouples. More information may be obtained by letter addressed to Mr. Grannis.

IMPROVEMENTS IN METAL PLANES.---Fig. 1.

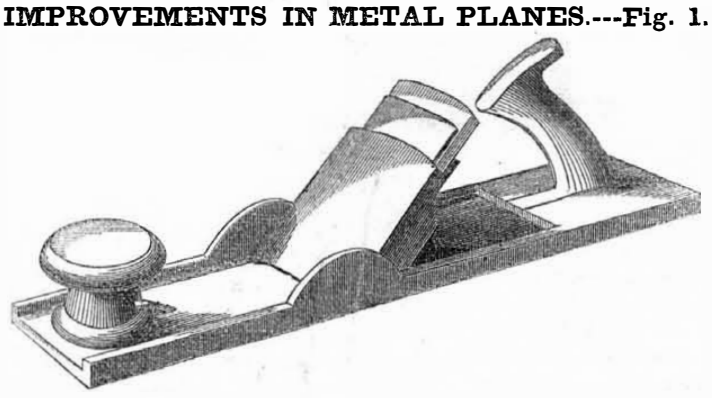
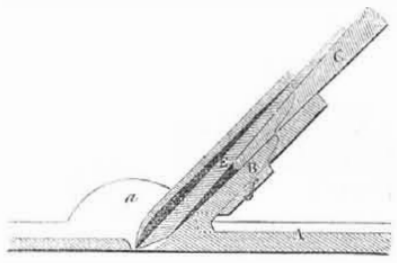


Figure 1 is a perspective view, and fig. 2 is vertical section of an improvement in metal bench planes, invented by Birdsall Holly, of Seneca Falls, Seneca Co., N. Y., who has taken measures to secure a patent for the same. The nature of the improvement consists in the means by which the cap of the iron is always made to drop into its place without requiring adjustment or setting; also an improvement in the stock and in the cap of the iron, which allows the width of the throat to be altered for different kinds of work. A is the stock, which is made of a cast-iron plate, with the stem, B, standing up from it at a suitable inclination, and with two projecting pieces, *a a*, one on each side, close in front of the stem. The stem, B, is of about the same width as the plane iron, and is made of tapering thickness, being rather smaller at the top. The two projecting pieces, *a a*, are of nearly semi-circular form, and of such width or thickness, or all at such a distance apart, as to allow the plane iron and cap to slide freely between them. The stock is furnished at the back part with a handle similar to a common plane handle, and in front of the throat with a knob.

The plane iron, E, is similar in its general character to the iron of a common plane. The cap consists of a cast-iron plate similar in form to the cap of a common plane iron, but it has a loop, *f*, which is of sufficient width and depth to fit over the plane iron, the stem B, and the wedge, G, by which the iron is secured. The bottom parts of the sides of the loop are formed with shoulders fitting to the semi-circular projecting pieces, *a a*, of the stock, and are at such a distance from the lower edge of the cap that when they rest on the projections the edge of the cap will be just above or within the face of the plane and parallel transverely to it; the edge of the cap is chilled or hardened.

The plane iron, E, is placed between the cap and the stem, B, and the wedge may be inserted between the iron and the stem, or between the cap and the iron; or between the back of the stem and the loop, *f*, of the cap. The first arrangement gives a wide throat which is best for rough work; the second gives a very small throat, suitable for planing hard wood or cross-grained stuff, or for finishing fine work; and the third gives a width of throat about half way between the widths given by the ather two arrangements. The difference in the width of the throats is produced by the alteration of the inclination of the iron and cap.

Fig. 2.



The advantage of having the cap to drop at once with certainty to its place, will be admitted by all accustomed to the use of bench planes, as it dispenses with the necessity of measuring and setting required in the common arrangement; and the want of a simple and sure means of regulating the width of the throat is well known.

More information may be obtained by addressing Messrs. Silsby, Race & Holly, assignees, Seneca Falls.

Steamers to France.

M. Gaillardet writes from Paris, that Louis Napoleon intends to establish a line of steamers from Havre to New York, and one from Nantes to New Orleans, touching at Havana. They are to be in the hands of private companies, but liberally supported by government.—[Ex.

[Unless the line is managed well, all Louis Napoleon's power cannot save it from failing. We hope it will be more ably managed than the line that was once established, made a few voyages to this city, and failed. These things should teach Frenchmen to select a proper company, which no doubt can be found in France, to manage the new contemplated lines with prudence, spirit, and address.

The Inventor of Chain Bridges.

The Illustrated London News records the death of Capt. Brown, R. N., inventor of chain cables, chain bridges, and suspension piers. He was 76 years of age at his death.

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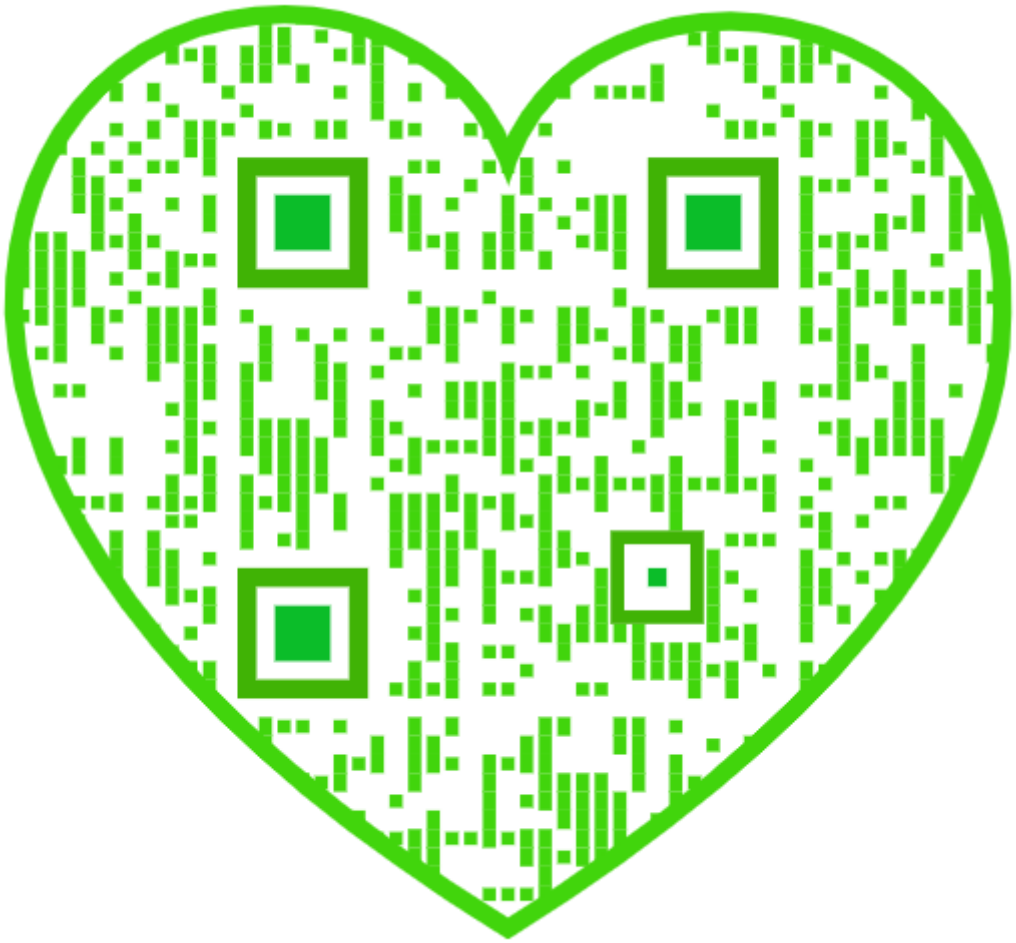


MISCELLANEOUS.

Arkansas.

From a recent travel in Arkansas, I am convinced that she possesses within her bosom the elements of a great empire. History presents no parallel to the advantages she now holds out to emigrants, in the way of getting rich lands, &c. Much the largest portion of the State is unsurpassed in the fertility of its soil and the extent of its agricultural resources; and the southern and eastern portions are now held to be the finest cotton lands on the globe. As a field for science, an opening for speculation, and capital, her claims are transcendant. Here, from her silver-crested hills and azure-robed mountains, science may pluck the gems. Here the hand of capital may be stretched forth to embrace rich and exhaustless mines of iron, coal, lead, marble, and other useful stones. To reap rich rewards, bring to light her vast wealth, develope her great resources, and make them available, her people hitherto apathetic, have now resolved to build a grand trunk railroad through the heart of the State, connecting the capital —Little Rock—with the Mississippi River, at Memphis, from which point railroads and rivers radiate in all directions. The country through which this road will pass is exceedingly fertile, and presents great facilities for cheap construction, requiring comparatively no cutting, being rich plains, prairies, and alluvial bottoms, crossing two or three beautiful and navigable, though small, streams, which can be easily bridged.

In crossing an extensive bottom, requiring an embankment, if alternate sections were made of wood—such as one hundred yards of a strong timber frame, and then fifty yards of earth,—a great improvement in railroad construction would be effected; this system would prevent vibration, and would also effect a great saving.

In a few years Arkansas will attain to be a State, great in her products, powerful in her influence, and confident in her powers.

Memphis, Tenn. R.

Railroad Accidents.

We cannot indulge in vituperous language towards conductors and engineers as some papers do, every time an accident takes place on a railroad. If we are to believe one paper all the accidents are caused by ignorant conductors—men below mediocrity in talent and education. Another paper strains to make the public believe that the majority of accidents are occasioned by intemperate engineers or inferior ones; the employees, at any rate, get all the blame for the accidents, the companies only get blame for not paying high enough wages so as to secure able men for conductors and engineers. We know that such conclusions and opinions are incorrect, and those who entertain them are ignorant of what they are talking about. We know that there are conductors and engineers employed on our railroads who are perfectly competent to fulfill all their duties; men who are highly educated and endowed with qualities of mind of the highest order. We do not wish to mention names, but we could easily do so.

It is a great wonder to us that there are not more railroad accidents, for when we consider how our tracks are all open, so many of them single, so many poor bridges, and beside all this, many of our railroads were built with curves and laid with rail for engines one-half lighter than those now used, and to run at one-half the present general speed, we say the conductors and engineers (taking the mass), deserve great credit for their vigilance and ability. Our railroad system is bad, and neither the conductors nor engineers should be blamed for this. When an accident occurs we want a strict investigation of it, and a prompt punishment for the guilty; but no man nor body of men should be condemned unheard.

Steamboat Explosions.

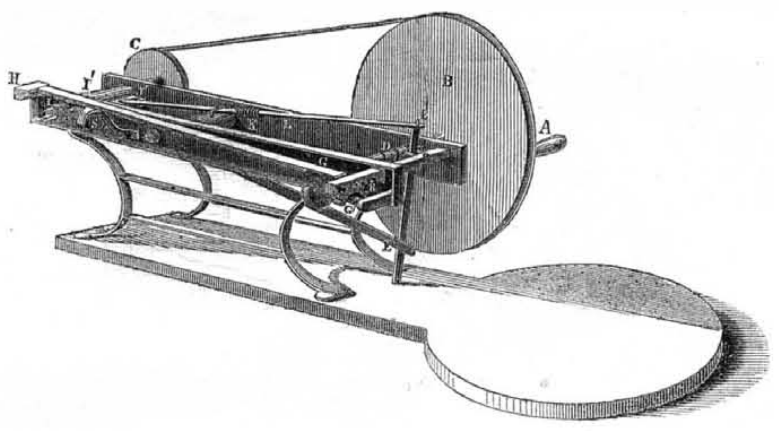
The steamer Glencoe exploded her boilers at St. Louis on the 3rd inst. She had 150 passengers; a great number were killed. She had just arrived from New Orleans.

The steamer Redstone exploded all her boilers on the same day as the Glencoe, while backing out of Scott's Landing near Madison Ohio. A great number were killed; 15 dead bodies have been recovered. When will our country be aroused to the iniquity of such catastrophies? See on another column.

American Cotton.

N. S. Dodge, Secretary of the U. S. Commission at the World's Fair, has published an article in the Washington Intelligencer about the Cottons that were exhibited in the Crystal Palace. There were samples from Asia, Africa, and the United States. Among the specimens of the East India Co., there were some very excellent kinds, of a mixed quality, but all exhibited carelessness in preparation, gathering, &c. There was a good sample from Peru, and some good qualities from Barbadoes and Jamaica. The African cottons were good, but not well prepared. For many purposes, he believes, it will meet with ready sale, as the quality is very good, and it is totally different from the cotton raised in our country. The soil, he thinks, is the cause of the difference in the quality of the cotton, and no soil in any cotton growing country is equal to that of the South, for raising fine long silky cotton.

CARTER'S APPLE PARER.



The accompanying engraving is a perspective view of the Apple Paring Machine of Charles P. Carter—formerly of Ware, Mass., but now of No. 18 Maiden Lane, this city N. Y., for which a patent was granted in October 1849. The machinery is placed on a bottom board or plate. A is a crank handle; B is a pulley driven by the handle; C is a smaller pulley driven by a band from B; I' is a spindle, on the end, I, of which are the prongs to hold the apple; H is the knife on the end of an arm, G. This arm is attached to a shoulder which has a segmental rack, G', on it, and this shoulder is fixed on a pin which turns in bearings; R is a small rack on a square sliding bolt. This rack is moved sideways, and by meshing into the segment, G', it turns the knife arm, G, giving it a half revolution, to make the knife act on the apple as it revolves on the fork, I. The knife is also guided according to the round shape of the apple by a rest, S. The bolt of the rack is moved by a screw, D, on the spindle of pulley B; E is an oscilating bar with a stub pin on its inside face, which fits into the groove of the screw, D, therefore, as the bar, E, is inserted between two cheeks of the bolt, R, the stub pin is guided by the screw to push the bolt to the left side, thus turning the rack, G', and operating the knife, H. When the knife has gone over the apple, the screw throws out the pin and the rack bolt R, springs back at once to commence a new operation. To bring back the rack bolt, it is attached to a flat arm, L, on the top, which has a spiral spring, K, on it, and another flat steel spring, E', below. These springs and guide bar give the knife arm steadiness, and bring it back suddenly to its position after every operation on an apple. J' is a clearer; it is a sliding head operated by the spring arm, L, which acts on a spring plate on the face of the said clearer, pushes it out when the apple is pared, throwing it off the prongs of the fork. This is a very simple and good apple parer. More information may be obtained by letter addressed to Mr. Carter, or applying at the place mentioned above.

Recent Foreign Inventions.

Improvement in Tanning.—George Laycock, late of Albany, N. Y., dyer, now of Doncaster, Eng., tanner, has taken out an English patent for the following improvements in treating hides and skins:—

Unhairing Skins or Hides.—The skins are first soaked in water and unfleshed, and broken up in the ordinary manner. The patentee then takes 7 lbs. of soda ash, pearlash potash, or any other strong alkali, and 6 lbs. of unslacked lime, and boils them in six gallons of water. He then adds to this mixture sufficient water to reduce the strength of the solution to 14° Twaddle's Alkali Hydrometer, and immerses the skins, handling them well at first, so as to expose to the solution every part of their surface. The skins are allowed to remain in the mixture until the hair starts at every part, when it is removed with knives, and the skins are then worked out in clear water, as is ordinarily practiced by tanners.

Sheep Skins.—To remove the wool from sheep skins, the patentee applies, with a white washing brush to the flesh-side, some of the above solution. In about two hours the solution will have caused the wool to start, when it is removed with knives, and the skins are then well worked out, as customary. This process effects a considerable saving of time over the system of limes at present adopted in the trade.

The Bait.—Instead of using hens and pigeons' dung, the patentee makes the bait by mixing with water a sufficient quantity of sulphuric acid to give it a perceptibly acid taste. The skins are immersed in this liquor, and will generally run down in an hour or two, but if they should not run down fast enough. more acid must be added, and the skins are then to be well worked out in clean water The acid is subsequently neutralized with stale urine, and the skins are again well washed.

Tanning the Skins.—For this purpose the patentee takes, for 100 calf skins, 100 lbs. sumac, 50 lbs. terra japonica, 12½ lbs. sulphate of potash, and 12½ lbs. alum, which he boils for half an hour in sufficient water to cover the skins. He then macerates in cold water 40 lbs. oak bark, which he adds to the above mixture, and immerses the skins therein, handling them well at first, and continuing to do so until the skins are found to be tanned, which will generally be in about six or eight days. The quantity of liquor above mentioned is sufficient for twenty cows, oxen or horses' hides, and for a hundred sheep, calf, or other skins.

The Grain.—The grain must be laid with weak liquor of the kind last described.—[London Mechanics' Magazine.

Another Terrible Steamboat.

The Cincinnati Gazette of the 5th inst. gives the account of one of the most terriffic steamboat explosions which has ever taken place. The steamboat Redstone lately commenced running between Cincinnati and Madison, and on Saturday at 12 M. left the latter place for Cincinnati on a trial of speed with about twenty cabin passengers. The number on deck is not known. The officers and crew numbered about twenty persons. She landed at Carrolton and took on a number of passengers, and then pushed out and started on. Upon arriving at Scott's Landing, four miles above Carrolton, at the foot of Craig's Bar, she was called in for a passenger, the Rev. Perry A. Scott, a Baptist minister, formerly stationed in Covington, and recently in Warsaw, Ky. Mr. Scott had been on a visit to his parents, and was returning to his charge. His parents and three sisters accompanied him to the landing to witness the departure, as the sequel proved, into the presence of his God. The Redstone shoved out and backed down from the landing about one hundred yards. A strong wind was blowing in shore, and it was with difficulty that she could back her way out. At the second revolution she made to start forward, her three boilers exploded at the same time, with a tremendous noise, shattering and tearing the boat literally to atoms. She sunk in less than three minutes, in twenty feet water. The ladies' cabin and aft part of the boat, from the main-deck up, in its shattered condition, took fire and burned down to the water's edge. In the explosion her chimneys were blown nearly across the river.

The awful force of the explosion can be conceived from the fact that a large piece of one of the boilers was blown half a mile, lacking five or six yards, from the wreck. Eleven bodies were blown into a cornfield at some distance from the water. Among them, those of the first and third engineers.

The people of Carrolton and the vicinity hurried to the scene; and twenty-five dead and wounded bodies were immediately borne to a small farm-house on top of the hill which rises back of the river, and which was converted into a hospital. The inmates of this house gave up their rooms, bedding, and every thing in their possession to the suffering. The scene here beggars all description. The mangled and ghastly corpses by the side of the wounded and dying, with inadequate medical aid and means for the care of the latter, the floor of the rooms covered deep with blood; this, and the view of the scattered wreck and the awe-stricken multitude on the shore below, made up a scene of horror before which the intensest paintings of Sue and Dickens pale and grow dim.

The river for some distance below Carrolton was strewn with the fragments of the boat, machinery, furniture, and clothing.—Small pieces of bedding and clothing were found at the distance of very nearly half a mile back from the river, while the trees along the shore were littered with the fragments of the same and of the wreck.

The cause of this explosion is very evident; it was recklessnes, that culpable public, and, let us say, legalized murderer. Almost every week we have to record some such calamity. Within three weeks, no less than 100 persons have lost their lives by steamboat explosions on the river between Cincinnati and New Orleans. All the laws which have been enacted, and all the safety-valves which have been invented have failed to reduce the number of explosions—there are just as many now as ever. We speak of these explosions frequently, our readers will see that we do it from principle, or we would not take up so much room in our columns with such a subject, but while our people are sent in scores into eternity every week by explosions, because they trust their lives to engineers and steamboat captains, we cannot hold our tongue —and will not. Our government in their zeal for the lives of some American sailors, cruelly treated in Japan, are said to be fitting out an expedition to punish those Asiatics; this shows a zeal for something more than a humane principle, or why is our citizens at home allowed to be killed so recklessly by such terrible explosions as that of the Redstone.

Indian Hemp.

An experiment was made in New Orleans a few days since by a druggist, with one of the narcotics so much used in the East—viz: Indian Hemp, or canabris indica, in order to test its application to medicinal purposes. He took six grains, (a very large dose) which produced great weight about the head, followed by irresistable bursts of laughter, during which, however, he was perfectly conscious of all that he was doing, or felt or thought.

Error.

The residence of George O.Donnell was given in our list of claims for March 2nd at New London, N. Y. It should have been New Lebanon, N. Y.

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For the Scientific American.

The Nebular Hypothesis.

The manner in which, and the materials of of which solar systems were created, have engaged the attention of the most expanded minds in all ages; and we might perhaps as well acknowledge that the subject is beyond our comprehension, were it not for the fact that many things which remained mysteries since man's creation, have lately been, and are being elucidated in the clearest manner. One fact of great importance is now conceded by every ingenious philosophic investigator, namely, that the Creator, like every other judicious mechanic, adapts means to ends, and employs agents to accomplish his glorious and beneficent purposes; and if "he is without variableness or shadow of turning," it is but reasonable to suppose that he always operated in the same manner.

J. B. Dodds argues that electricity contains all the elements of matter and thinks all things were created of its substance; and that it is a substance, is proved by its making holes through solid bodies when launched from the clouds. All astronomers who have explored space with powerful telescopes, state that there are in the illimitable expanse, vast bodies of ethereal matter, called nebulous, and supposed to be partially condensed electricity on account of its rarity. La Place, who took up astronomy where his predecessors had left it, supposes all solar systems to have been formed from this nebulous matter; and that, governed by those laws which the Creator has established to regulate all things, creation is still progressing, and new worlds are still bursting into progressive being in the following manner:—It is well known that celestial bodies have a rotary motion on their axes; and. when these partially condensed electrical masses have attained sufficient auxiliary rotary motion to create a centrifugal force that overbalances the power of cohesive attraction of the particles composing those masses, they throw off a part of their equatorial surface matter which has the greatest velocity, being farthest from their axes. This part, as well as that remaining, being yet in a fluid state, contract again into globular bodies by virtue of the attraction of aggregation inherent in every particle of matter, just as water falling from the clouds forms spherical drops. When the central mass becomes still further condensed, it throws off other planets in succession, until the central mass, which retains nearly all the uncondensed electricity, and remains as a central sun to the whole system, becomes sufficiently reduced to proportion the centrifugal force on its surface to the central force of attraction. But the parts thrown off still retaining their state of fluidity, and receiving also a rotary motion on their axes by the projectile force that casts them off, throw off parts from their equatorial regions also, and these are called moons, and rings in Saturn.

Whatever may be thought of this theory, called the nebular hypothesis, it cannot be denied that it is the only one that will account for existing facts, a few of which may be named:—

1st. The greatly varying and progressive distances at which the planets are placed from their respective suns, and the secondaries, or moons, from their primary planets, show that they were cast off at different times and with different projectile forces.

2nd. Kirkwood's Analogy—which gives a rule to calculate the lengths of their respective days, when the time of their revolution round the sun, or of the secondaries around their primaries, is given, and vice versa—confirms the nebular hypothesis, by showing that the projectile force with which they were cast off, gave them a rotation on their axes proportional to their orbital velocities, and to the larger planets the greater rotary motion proportional to their sizes.

3rd. Every person knows that the larger a heated body is, the longer it requires to cool (to radiate its heat); and we are accordingly informed that the larger planets, which were of course cast off before the earth was, have not yet lost sufficient of their primeval heat to condense them down to the consistency of water on our globe; and they may therefore require many ages yet to become habitable for such beings as we are: the density of Jupiter and Uranus being about one-fifth, and of Saturn one-tenth that of the earth.

4th. The secondary planets are located much nearer to their primaries than the primaries to the sun; and the rotations of the former on their axes are much slower than those of the latter; the length of a lunar day being the same as of a lunar month.

5th, The orbits of the planets lie nearly in the plane of the equator (equinoctial, rather) of the sun, and those of the secondaries do not vary very much from the planes of the equinoctials of their respective primaries, except Uranus; and all revolve in planes which cut the bodies around which they move into two equal parts, through their centres; but it is easily understood that, if the mass cast off by a central body were to separate more from one side of its equator than from the other side, the axis of that central body might be somewhat changed.

6th. The heat and consequent fluidity of the sun must have been much greater when the primary planets were thrown off, than that of the primaries when they cast off their moons; and these latter being so much smaller than the former, would therefore cool much sooner. We find, accordingly, that the mountains on our moon are much higher in proportion to her size than the mountains on the earth,—showing that the moon cooled so fast as not to allow sufficient time for a more regular arrangement of her surface matter.

7th. On the supposition that the earth was once in a fluid state, Newton calculated that, in consequence of the centrifugal force generated by her rotation, her equatorial diameter must be longer than the polar, while the French mathematicians contended for the contrary; but, when the question was afterwards decided by measurement, it was found that Newton's ratio of the two diameters was as nearly right as the data on which his calculation was founded, would allow.

I have given the merest sketch of a subject on which a volume might be written, and at which many still sneer, without attempting a scientific argument against this hypothesis; but the more the proofs above stated are contemplated and compared with the laws of inertia and motion, the clearer and stronger will the evidence in favor of the nebular hypothesis appear. H. R. Schetterly.

Howell, Mich.

[For the Scientific American.]

Gas and Leakage of Pipes.

In the case mentioned on page 179, this volume of the Scientific American, whereby a number of persons lost their lives by inhaling a great quantity of gas which had escaped from pipes, the question may be asked, "how did so much gas escape on that particular night—did the pipes burst?" A gas pipe never bursts from the simple pressure of the gas, for the pressure is very limited, while the pipes, being so small, are very strong. A large leak could be detected during the day, by the offensive odor and suffocating nature of the gas. I admire the goodness and wisdom of the Creator in giving us this useful agent for illuminating our streets and dwellings, and endowing it with qualities which make it a good servant, and from becoming our master by the warning it gives of its presence in any dangerous quantity. As a practical man of twenty years' experience, I give it as my opinion that the accident referred to, was caused by one or more of the stop-cocks being left open. This is not an uncommon occurrence; I have known ignorant persons blow out the flame of a gas burner, as they would a lamp, and have also known of their turning the key so as to extinguish the light, and then throw the pipe open again, or partially so. In the article referred to, it is hinted that many diseases are caused by inhaling gas that escapes through leaky pipes. This is not so; the inhalation of carburetted hydrogen in minute quantities, never produced any disease whatever. It is unable to support combustion or respiration; this is the reason why life is lost by it, still that does not prove it to be poisonous. I speak of its inhalation in very minute quantities, for in no other condition will it be inhaled by any consumer of gas for one day. Men engaged in the manufacture of gas are very healthy, in general, and as a gas fitter, and while engaged in the works, I have inhaled it, in great quantities, without any injurious effect.

Carbonic acid gas is mentioned in the said article, as if its deadly qualities were known to everybody; but the truth is, everybody does not know of the destructive qualities of carbonic acid gas, nor of its still more deadly fellow, "carbonic oxide." People in general do not know that both gases are given off by the combustion of charcoal; all persons ought to know this; parents should teach this fact to their children among their household words. These facts would be more generally understood, if people, instead of reading works of fiction, which have a pernicious tendency, would read such works as the Scientific American.

The gas used for general illumination is named "carburetted hydrogen," from its being composed of carbon (charcoal) in a gaseous state, and hydrogen gas. While undergoing combustion, the carbon unites with the oxygen of the atmosphere, and forms carbonic acid gas; the hydrogen unites with the oxygen of the atmosphere and forms vapor of water. The atmosphere is composed of oxygen and nitrogen, which last named gas is as unfit to support life as carburetted hydrogen. Supposing one volume of gas to have been consumed in lighting a room, it requires the oxygen of fifteen volumes of air for its combustion, and it thus leaves in the atmosphere two volumes of carbonic acid gas, twelve volumes of nitrogen, and two volumes of vapor of water—in all sixteen volumes of gases unfit for respiration. This does not apply to gas alone, but to the combustion of all hydro-carbons—oil, tallow, and wax lights. We should be taught by this how important a subject that of "ventilation" is; it is not generally understood, and therefore not generally appreciated.

Yours, W. Colinson.

New York.

Testimony to the Value of the Meat Biscuit.

Messrs. Editors—In a recent number of your paper I noticed an article upon "Meat Biscuit," invented by a Texian gentleman by the name of Borden. Having had an opportunity to test the qualities of the Extract Meat, as it is sometimes called, I am induced, through your columns (if you please), to add my testimony to its merits. I have used it not only at my table, but have prescribed it frequently for several months past, as an article of diet, for a variety of diseases. Being, by a peculiar process, dispossessed of the tendinous portions of the meat (of which it is mainly composed), renders it very easy of digestion, and when taken into the stomachs of dyspeptic individuals. instead of experiencing the usual train of distressing symptoms, to which they are subject after their meals, they feel a general sense of refreshment and restitution of vigor. As an article of diet, for a person under any circumstances afflicted with indigestion, observation has forced upon me the conviction that it is invaluable. I have prescribed it as diet for the convalescent with results equally happy to the patient and satisfactory to myself. The inventor is to me a stranger; but I trust he will pardon the liberty which I take in calling the attention of the medical faculty to the Meat Biscuit. Try it, gentlemen. E. W. Spafford, M. D.

Portlandville, N. Y., April 3, 1852.

New Theory of Coal Basins.

A Mr. McGinnes, of Pottsville, Pa., a year or two ago, advanced a theory that there were more than one coal basin in the Schuylkill region—that the coal strata were thrown into saddles at a number of places, where the seams would be found very deep, and near the surface. Recent experiments have demonstrated the correctness of his theory. "A perpendicular proof shaft," says the Philadelphia Ledger, "has just been sunk in the red-ash range, below St. Clair, on Mr. Carey's land, which, after passing through the two middle grey-ash veins, has, at the depth of 400 feet from the surface, revealed the first big white-ash vein, 28 feet thick, and of splendid quality; which was the thing to be demonstrated.'

News From Europe in Five Days.

The authorities of Newfoundland have granted to Mr. H. B. Tibbitts and associates, of New York, the exclusive right to construct and use the magnetic telegraph across that island, for the period of thirty years. The grant is designed to facilitate Mr Tibbitts in his scheme for the establishment of steam and telegraphic communication between New York and Liverpool, or London, in five days. The telegraph is to extend from New York to St. Johns, from whence a line of steamers is to run to Galway, where another line of telegraph is to commence, extending to London. This latter line will, it is said, be completed during the current year. The distance from St. Johns to Galway, is 1,647 miles, or about five days' sail.

The Telegraph in Mexico.

Messrs. Editors—I came out here last summer, from Philadelphia, for the purpose of constructing and carrying on the Electro-Magnetic Telegraph. We had 130 miles completed by the first of November, extending the line from the city of Mexico to Nopalucan, and taking in its course the city of Puebla. We have men at work completing it to Vera Cruz; our materials are on the ground, and even considering that the country is one of difficulties, we hope to be able to extend the electric spark to the eastern coast by the middle of April next—after which it is contemplated to extend other lines throughout the Republic. This is the first and only successful new improvement that has as yet been introduced into this country, and it bids fair to be both profitable and useful, and may doubtless be regarded as a stepping-stone to other national improvements. Wm. McRea.

City of Mexico, Feb. 25, 1852.

Freezing of Vegetables.

Contrary to the general opinion, freezing is not necessarily destructive of life in vegetables. At Charles Island, in Hudson's Bay, according to Captain James, the trees had to be thawed by fire before they could be cut down, and there is no doubt that the roots are as well frozen as the stem since the vegetation prospers in Siberia, where the following observations have been made:—A well was dug 400 feet deep, and the temperature at 50 feet was 18° Fah., at 77 feet 19°, at 119 feet 22°, at 300 feet 28°, at 382 feet 31°. At this place the ground is frozen to the depth of 400 feet; the cold reaches 58° below zero, and the mean temperature of the two winter months is 40° below zero. During the 128 days during which there is no frost, the strata of eternal ice are never thawed to a greater depth than 3 feet.—[Ex.

[It is not a general opinion in the United States, that *freezing is destructive to vegetable life.* Every man who has lived in the northern States knows better. His axe, if he has ever made the forest bow beneath his sturdy stroke, has told him oftentimes of the complete penetration of frost into the interior of the tree.

Curious Phenomenon.

A phenomenon at sea is thus described by Capt. Leslie, of the bark Guilford:—Arrived at Rio. Feb. 10th, in lat. 27.00 N., long 61.00 W. in the northern board near the constellation of Ursa Major, the sky from N. to N. E. by E., assumed the most beautiful appearance I have ever witnessed. It appeared as if a vast volcano, bursting suddenly out beyond the visible horizon, threw its refulgent shadows on the sky to the altitude of 25° to 30°, producing the most vivid colors, some of the brightest scarlet, others of the most beautiful yellow, intermixed with streaks and columns of fire. The whole producing one of the most grand and beautiful phenomena imaginable. Its duration was ten minutes, at the end of that time it gradually vanished and finally was lost to view. The weather had been very pleasant, the evening mild and serene, and so continued for many days.

Monument to the Founder of the Smithsonian Institute.

Dr. Stone, the sculptor, has prepared a design for the monument to Smithson, to be placed in the Institute grounds. It is to be nineteen feet in height—the pedestal ten, and the statue nine. The space between the plinth and frieze is six feet. From this cylindrical plane, projects four allegorical groups in basso-relievo, representing young Freedom, emblematic of America in the progression of development to maturity. The frieze itself carries out and completes the minorities of the allegory, and alone is worth close study.

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NEW INVENTIONS.

Lamp Oil Can for Machinery.

John Williams, of Brooklyn, N. Y., has taken measures to secure a patent for an improved oil can. The can is made, so as to contain a lamp united to the can in front of the spout. While filling the can with oil, there is an aperture through which the oil also passes into the lamp to fill it. There is a valve in the oil can, at the bottom of the tube; this valve has a spring on it, and a button; by pressing the finger on the button, while holding the can by the handle, the valve is operated and the oil allowed to pass into a tube and out of the spout on to that part of the machinery which is to be lubricated. The valve is self-closing, and prevents the escape of any oil except when operated by the finger. The lamp throws its beams upon the machinery, and affords a most excellent light, so as to enable the engineer to lubricate the joint requiring the oil. At night this improvement is of great advantage, it is also a good one for many dark places, where much machinery, of a necessity, is located. It will prevent, as often happens, the engineer from missing the place to be oiled.

New Tally-Board.

Francis N. Clark, of Chicago, Ill., has taken measures to secure a patent for a Tally-Board for keeping a correct account of a cargo of lumber, or any other commodity, as it is being discharged. There are a series of screw rods properly secured over a board, these rods being fixed so as to be moved either to the right or left, according as they are turned upon the board. Underneath each nut of a screw rod, there is a space which is graduated in any proper manner by turning either screw rod. The graduated space shows how far a nut has been moved on the rod. According as the nuts and rods are turned on the graduated spaces, so are the tons or half tons of the delivered cargo registered on the board.

This is a great improvement on five chalk lines and a cross—the common mode of tallying now practiced.

To Prevent Chimneys from Smoking.

Eliphalet Nye, of Nashua, N. H., has taken measures to secure a patent for an improvement in chimneys to prevent them from smoking. The nature of the invention consists in applying a portion of a syphon to the upper part of a chimney, so that when it is attached, a perfect syphon is formed, the upper part of the chimney, being the long leg, and the portion which is attached, the short leg. By this arrangement, a current of air is produced in the upper part of the chimney, and the smoke, as a natural consequence, is always carried out of the chimney.

Improvement in Steam Boilers.

R. S. Rettinger, of Louisville, Ky., has taken measures to secure a patent for an improvement in steam boilers; the boiler is constructed with an inside shell, having small flues attached, said shell and flues being within the boiler, and so arranged that the inside shell and the small flues may be detached from the boiler and lowered into a pit to be cleansed.

Improved Railroad Car Truck.

W. D. Arnett, of Fairfield, Jefferson Co., Iowa, has taken measures to secure a patent for an improvement in Railroad Trucks, the nature of which consists in the employment of friction wheels applied in a peculiar manner to the axis of the truck wheels, for the purpose of diminishing friction.

New Machine for the Gold Regions.

Within a few days we have seen the model of a machine, named the Plano-Spherical Stamper, Grinder, and Amalgamator, for reducing the gold quartz to powder, and amalgamating the gold at the same time with quicksilver, which is unique for these purposes, and embraces qualities of a totally different and superior character to any other used for the same business. Measures have been taken to secure it by patent, and for effectiveness, simplicity, and durability, it will create no small sensation when brought before the public, which will be done very soon, as a large machine is now being constructed.

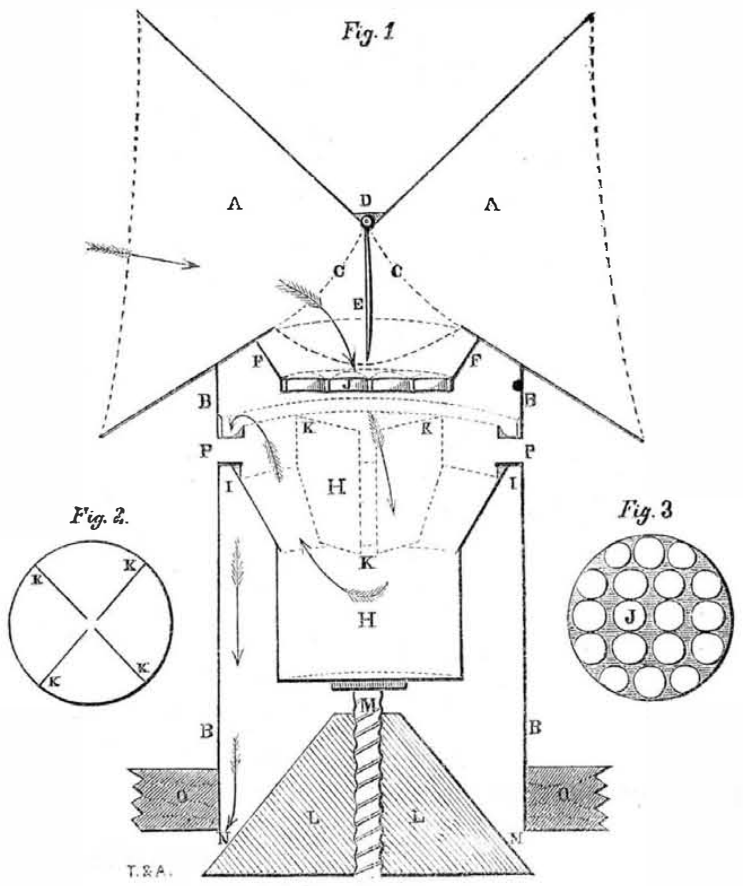
Improvement in Wheels.

Messrs. D. H. Dotterer & T. P. Kinsey, of Scranton, Pa., have taken measures to secure a patent for an improvement in cast-iron spoke wheels. The rims and hubs are connected by spokes, which are tangential to the periphery of the hub. The tangential spokes allow the rim of the wheel to contract without splitting, these spokes obviate the necessity of dividing the hub to prevent the splitting by the contraction consequent on the cooling of the metal after being cast

To clean carpets, make up a strong lather of soap, by cutting it into small pieces and dissolving it in boiling water; let it cool, and then pound the carpets well in it, by a pounder, after which the carpets should be pounded five times in clean cold water; they are then to be hung up and dried in the atmosphere.

To preserve out-door wood-work, such as fence, &c., boil together 1 gallon of coal tar, 2½ lbs. of the sulphate of zinc, and lay it on hot with a brush.

PAINE'S PATENT SYSTEM OF VENTILATING RAIL-ROAD CARS.



The accompanying engravings represent the improvements made by Henry M. Paine, of Worcester, Mass., which were patented on the 6th of last January, and the claim for which was published and noticed in our regular list of patents for that week. Figure 1 is vertical section of the apparatus for taking in the air, and figs. 2 and 4 are plan views of parts belonging to it. This apparatus is erected on the roof of a railroad car, communicating with the air outside, and letting it into the car. Fig. 4 is a plan view of the windows of a car showing how the ventilation is conducted.

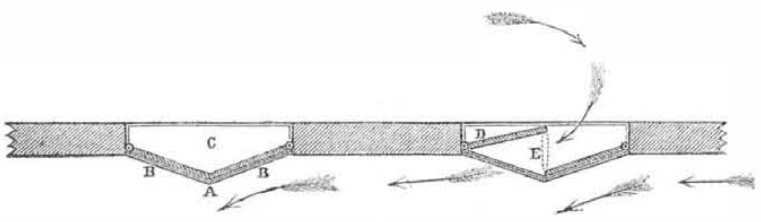
Two cones, A A, with their apex joined, are set upon the top of a vertical cylinder, B B B B, in such a manner that their axis will be at right angles with that of the cylinder. At the junction of the cones with the cylinder, an opening, C C, is made through the cones, so as to enable them to communicate with the cylinder. At the intersection, D, of the cones, A A, a flap valve, E, is hung, and is of sufficient area to cover the apertures, C C, in the cones. The axis of the cones is set on a line with the car's course, and the currents of air entering the mouth of the cone impinge against the flap valve, and cause it to close the aperture of the opposite cone, and deflect the air downwards into the vertical cylinder, and thence into the car.

As the air that is in the immediate vicinity of the train, is more or less charged with dust or cinder, the following arrangement is made to arrest all particles of matter held in suspension by the passing currents, and prevent them entering the cars.

The neck of the cylinder, B B B B, near its junction with the cones, A A, is contracted by a conical diaphragm, F F. Under this diaphragm is a tank, H, into which the dust and cinder entering with the air, is precipitated by its superior gravity—the air passing over the top of the tank, H, as indicated by the arrows, and then down the spaces, I I, between the vertical cylinder, B B B B, and the outside of the tank, H, into the car.

Experiments have proved that when the

Figure 4.



air enters in a large volume through the mouth of the diaphragm, it will bend and carry over in its centre particles of dust and cinder into the car. In order to prevent this result, the neck of the diaphragm is filled with short tubes (J, figs. 1 and 3) which divide the volume of air into a number of jets, and effectually precipitates the dust and cinder held in suspension by the passing air.

When the tank is left with a clear capacity, the cinders that have accumulated in it, are hr own into eddies, and carried over into the car, by the first that enter on starting the car. To obviate this difficulty, the tank is divided into compartments (K K K K, figs. 1 and 2.)

The vertical descent of a strong current of air would incommode persons in its immediate vicinity, and to prevent such action, a conical valve, L, is sustained and worked by means of a screw, M, attached to the bottom of the tank, H. The air, in its descent, acting against the sides of the valve, L, is deflected in radial lines through the car, over the heads of the passengers.

The quantity of air entering the car can be graduated by the working of the screw, M, closing or opening the aperture, N, between the cone valve, L, and roof of the car, O.

As rain and snow will enter the cars with the air, and be deposited in the tank, the supporters (P P) of the tank, H, are made hollow, so as to convey outside of the cylinder, B B B B, and on to the roof of the car, any excess of water that may accumulate by the causes mentioned.

The use of the ventilator just described, in winter, entirely removes all annoyances of cold draughts, and maintains an equal temperature throughout the car, and in summer, to a great degree, prevents the entrance of dust or cinder at the windows; but with strong winds against the sides of the train, the quantity of air entering the injectors is not sufficient to counteract the lateral pressure against the open window; therefore a modification of the window itself has been made the subject of successful experiment, and the diagram, fig. 4, is given in explanation of it.

The window is divided into two leaves, which are hinged to either side of the window frame, and when closed form an obtuse angle with the car's side, as seen at A, B B being the sashes. The stools of the windows, C, project from the car's side equal to the distance, and in conformity with the angle formed by the window sash. When the window is to be opened, the rear sash, D, is opened inwards, leaving the front sash closed. The air, impinging against the closed sash, is deflected from the opening made by drawing in the sash, D, as indicated by the arrows, and tends to form a vacuum at the point E, which the air in the cars, rushes in to supply, thus creating a draught out of the open space.

Without enumerating further the merits of this invention, it is offered to the favorable consideration of all who feel interested in accomplishing the end for which it is recommended. There need be litle or no additional expense incurred in applying this improvement to new cars, while the attachment upon old cars only involves an expense of about one hundred dollars, and a detention of but a few hours, without mutilation or disfigurement of the carriage. The invention is so simple in its detail, that one skilled in carpenter's work will have no difficulty in applying it. H. J. Hale, 146 Broadway, this city, is the General Agent.

McCormick's Reaper.

It is well known that our patent laws provide for the extension of patents for seven years beyond the first term of fourteen years, if the inventor has not been suitably compensated. The application for the extension is made to the Commissioner of Patents, who has full control of the matter. When, therefore, an application is made to Congress for the extension of a patent, it is presumed to be for a second extension—something not provided for in the Patent Laws. This gave rise to the sentence in reference to the extension of McCormick's patent on page 205, which states, "it [this patent] was extended, we believe, once before." The patent was never extended, as we learn by the Report of Senator Dawson on the subject, which was ordered to be printed on the 30th of last month, and which we have just received. Mr. McCormick has obtained three patents for improvements in Reaping Machines, one in 1834, and two since that time. The first expired in June, 1848, but he made application for its extension in the prescribed way. Edmund Burke, the then Commissioner, did not grant the extension, from the fact that some of the features and claims of Mr. Hussey's patent, dated December, 1833, conflicted with McCormick's, but in evidence submitted, it appeared that Mr. McCormick invented his machine in 1831. The evidence taken was somewhat informal, and this led the Commissioner to refuse the extension. It appears that Mr. McCormick never made a cent on his first patent, and it is for it that he wishes the extension. and which Mr. Burke now states should, in justice, be extended, and this will make the the whole term twenty-one years; he recommends the extension of Hussey's also,—this is fair. We make the correction as a matter of honest principle.

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Scientific American

NEW-YORK, APRIL 17, 1852.

The Wheeling Bridge—Steamboat Chimneys.

The Supreme Court of the United States has rendered its decision in the case of Pennsylvania, versus the Wheeling Bridge Co. The State of Pennsylvania brought an action te restrain the said company from obstructing the navigation of the Ohio river, and injuring the plaintiff, in respect to steamboats running from Pittsburg down, and to it up, said steamboats having to pass under the bridge. The complaint was—the bridge is a nuisance—an obstruction to the passage of certain steamboats which have high funnels, during high water in the river. The decision rendered is, that the bridge is an obstruction, and although some questions are not fully decided, it amounts almost to an order, "the bridge must come down." Chief Justice Taney dissents single and alone from the decision, and has given his reasons for so doing. He does not discuss the question directly, whether or not the bridge is an obstruction; he takes the ground that the United States Courts have no jurisdiction over the matter. He believes his brethren have committed a grave error in their decision, as the court has no law to guide them, and the jurisdiction exercised is without a precedent. We agree with him; Congress alone has power over this case. The bridge is in the State of Virginia, over an inland river, and Congress has made no laws for deciding such a case. It has power, no doubt, to do so, but in exercising it, how will Congress proceed? The decision of the court asserts that there were seven steamboats with high funnels, which were obstructed in their passages during high water; it also asserts that by increasing the height of the chimney of one boat its speed was increased, and cutting down another, its speed was decreased. To pass the bridge during high water, part of the chimneys of these boats would have to be lowered by an apparatus. This was an obstruction truly, and a bad one. None of the chimneys were under 60 feet, and those of one boat were over 80 feet high. If Congress attempts to pass a law on the subject, some knotty questions will come up, such as "will we allow bridges with draws, or shall we prescribe a certain height for steamboat chimneys?" There were various opinions about the scientific questions of draught and the height of steamboat chimneys. We have not seen all the evidence on the subject; it would be a treat to us to examine it, for we are confident that witnesses of repute have given queer testimony. The Supreme Court adopted the view that long chimneys promoted the draught. Here is what the court says:—

Professors Renwick, Byrne, and Locke say, that by a law of nature the force and velocity of a draught depend upon the height of the chimney—the force and velocity being measured by the difference in the weight between the column of air within the chimney and an outside column of equal height and diameter; so that a reduction of the height of the chimney involves a diminution of that force with which nature supplies air to combine with fuel for combustion, and by consequence there follows a diminution of heat developed in the furnace, or steam generated in the boiler, and of power by which the wheel is moved, and the boat propelled.

The commissioner in his report says, "the deduction of science also shows that the draught is increased by elongating the chimneys." In this question economy of fuel is not the object to be attained, but the greatest practicable speed, consistent with safety. And this is attained where there is no defect in the furnace by the combustion of the largest amount of fuel. Forty-three bushels of bituminous coal are consumed per hour by each of the Pittsburg packets.

The commissioner says, "in relation to the question whether chimneys as high as those now in use upon the Pittsburg and Cincinnati packets, or some of the largest crafts on the Ohio, are necessary for obtaining a maximum of speed desirable in the navigation of the river, there is a diversity of opinion among the witnesses, especially among those who are not acquainted with the scientific principle of chimney-draught in reference to the combustion of fuel for the generation of steam. But I think there is a great preponderance of the testimony, even of that class of witnesses in favor of the necessity of very high chimneys, upon the large Ohio steamboats."

Here it states that there was a difference of opinion among those *not acquainted with the scientific principle of draught*. We must say, that as enunciated above, we do not understand it either, and we should like to know who does—are these opinions scientific ones? that is the question. Neither the force nor the velocity of the draught is regulated by such a law, and it must be wrongly stated above. The ascent of smoke up a chimney depends on the comparative lightness of the column of heated air within and an equal column of the atmosphere; the longer the chimney, therefore, the greater will be the draught, provided the fire affords sufficient heat to warm the air, and certainly there is always plenty of heat in our steamboat fires. But in some cases the draught of a chimney has been lessened by increasing its height. If a chimney like the iron funnel of a steamboat were to be constructed so high, and exposed to an external atmosphere that would condense the air at the top so as to render it heavier than the heated column within, the smoke would be forced down; there must therefore be a point—a line—for the proper height of every chimney, but that line is very flexible. There was a light house in the Isle of Portland, which had a smoky chimney; it was erected considerably higher, and this made it a great deal worse, Prof Faraday was commissioned to examine it, and cured it by cutting down the chimney, and making the top of a concavo form outside.

Reformed Patent Law.

The Bill to amend the Patent Laws, which has been before the two last Sessions of Congress, has passed to a second reading. We cannot say that we have any fault to find with it, except the 8th and 12th sections, which we think should not pass as they stand. We will quote the sections and make a few remarks on them:—

"Sec. 8. And be it further enacted, That the knowing and willful sale by a factor, or the knowing and willful use by an incorporated company, or a company enjoying the rights of incorporation, or the knowing and willful use or sale by any person or persons, without the consent and authority of the patentee, of the product of a patented machine, or invention, or discovery, whether said product be made in this or any foreign country, shall be deemed an infringement within the meaning of this act; and the party or parties so selling ing or using, shall be liable as in other cases of infringement."

This section has been introduced to protect the owners of the Blanchard patent for making shoemakers' lasts, and the owners of the Woodworth Planing Machine against the unfair competition of persons in Canada, who have been running Blanchard's and Woodworth's machines there, sending over the lasts and lumber here, and selling them at a lower price than the owners of these machines in New York could, and pay the stated tax to the patentees. There should be ample protection to our people who have paid and do pay the patentees for the right of using patents; but, at the same time, it is our opinion that some part of this section should be struck out or more carefully elaborated. It provides that "the knowing and willful use of the product of a patented machine, by any person or persons, without the consent of the patentee, shall be deemed an infringement of the patent." Now, by this clause, a man who purchases a coat or pair of pantaloons, or a shoe last, or a planed plank, must first find out whether or not these articles have been produced by How's Sewing Machine, Blanchard's Last Machine, or Woodworth's Planing Machine, and if so, get the consent of the patentee to use it or them, or be liable as in cases of infringement of the patent. It may be said, "this is no objection, for the buyer need not know that it is the product of a patented machine;" this is true, but then the plain inference of the section is in the use of the word *willful*, to make a man liable for every board in his house, unless he has the consent of the patentee for its use. We hope this clause will receive more attention from Senator Norris. Do not leave it so ambiguous, and do not let it pass as it is, or it may lead to most unfortunate results in the daily transactions of life. It would be far better to pass a supplementary act, for the relief of the owners of the Blanchard and Woodworth patents, than enact such a section as this, making it a principle in our Patent Code. We wish to see inventors and patentees protected, and they can be fully but do not pass a bill that may lead to such aggravating actions among our people, as will lead them, in a few years, as has been threatened by some, to demand an entire repeal of the Patent Laws, which would be an unfortunate thing for the progress of the Arts:—

"Sec. 12. And be it further enacted, That copies of foreign patents and the specifications thereunto belonging, describing any invention or discovery in the arts or sciences, that may be certified as exact copies of the originals or of the records, or rolls, or files thereof, by any consul or vice-consul of the United States, under his hand and official seal, shall be read in evidence in any suit, either under proceedings on scire facias, in equity, or at law, in any of the courts of the United States. And the consul or vice-consul shall be subject to the same penalties for falsely certifying any of said papers as exists in other cases of issuing false certificates: Provided, also, That said certified copies shall be subject to disproval according to the rules of the common law."

We certainly have strong objections to this section. It should be struck out entirely. If a patent has not been published in any printed work, it should be excluded as evidence. There is no necessity for the passage of such a provision in the Bill. We do not see; we cannot divine how such a provision got into it. If the section merely mentioned that such patents might be used as evidence in contested cases before the Commissioner of Patents, or the Judge on an appeal, then we could find no fault. We could give many good reasons why this provision should not be included in this Bill, but to us, it appears that just calling the attention of the Senate to the subject, will lead to a more full consideration and subsequent expungement of it.

The Great Propeller Case in England.

Our readers will remember the account we presented, on page 165, of the great patent trial in England, whereby injunctions were granted to restrain a Dutch Company from running their screw steamships in British waters, because they infringed the patent of a Mr. Lowe, which was dated 1838. We stated, in the article referred to, how injurious such a decision would be to the interests of commerce, if adopted as a rule in patent policy—a rule which we are afraid our Senators are about to make a law by section 8 of the new Patent Bill. In the said article we stated that, as Lowe's patent was about to expire, application had been made to the Privy Council for its extension, and that a hearing of the case would soon be had. It has been acted on; the case occupied five days in hearing before Lord Craworth, Sir Knight Bruce, and Sir Edward Ryan. The most eminent counsel were employed on the part of Mr. Lowe, and the different Screw Boat Companies opposed it by eminent counsel also. It appeared from evidence, that the practical value of the use of the screw, as a propeller, was demonstrated and rendered a public benefit independent of and without a knowledge of Lowe's patent, after the patent was granted. It was held that the patent never had conferred any benefit upon the public, which is the object of the patent law. The testimony of Thomas Lloyd, Superintendent of the Machinery Department of the Navy, given in the case, is the most elaborate and instructive ever presented on the subject of propellers. He stated that a sixth part of an entire turn of a screw was that which was used in the navy, and this was adopted after many expensive experiments to find out the best form and best relation of parts. A screw divided into two halves was first tried on the "Rattler," a vessel built and fitted for this very purpose of testing the screw, by making experiments. This was in 1843, and from a screw of two blades—two halves of a turn, they commenced to reduce it so as to find out the smallest section sufficient for the purpose. It was found that two blades of 1-6 area—1-3 total—were more efficient than others. Blades above and under 1-6 did not give such good results. No less than thirty screws were tried.

The decision in this case will remove the fears of some of our screw steamship companies. At the same time another decision was given against the extension of Taylor's patent for the flat bladed propeller. There is still one screw propeller patent in existence in England, viz., Capt. Carpenter's, which *may* create some trouble, but we scarcely anticipate any, although he sets up the claim for the exact propeller in such general use in England.

Aerial Navigation.

On Tuesday evening last week, M. Petin, a French gentleman, whose name has been before the public in France for some time, delivered a lecture in the Broadway Tabernacle, this city, on the subject of Navigating the Air. He was prevented from attempting to carry out his system in France, by that blessed law of the President, which forbids the assembly of large bodies of the people in one place. He has come here expecting to receive the encouragement of the American people in endeavoring to give his system a practical test, which he will soon attempt at Union Course, L. I. He had an interpreter, who translated what he said. Mr. Petin is a man of great seriousness, having implicit confidence in his own system, and he is determined to lose his life or do something great. The audience was not large. In front was a large painting showing his machine. It was composed of a frame like that of a steamboat hanging below three large spherical balloons. A model of it was exhibited; it had two side screw propellers and wings capable of being set at different angles, to direct the machine down or up, like the wings of a butterfly, or hawk. A steam engine is to be employed, and he expects that aerial navigation by his system will yet make all nations a universal republic. He said he had discovered no new law, but had been an attentive observer of nature. The use of the three balloons, (or two will answer), is to provide inverted sustainers of the car, resting on the medium of the atmosphere, the same as a weight attached to something which floats on water, the double balloon made to equipoise the car, like two scales attached to a beam, the one acting as a counterbalance to the other. M. Petin had acquired his knowledge of the principles of aerial navigation, by studying the motions of men, fish, and birds.

All bodies move, because they meet with a certain resistance round themselves, or, in the medium which surrounds them, let that medium be water or air. A body will not move in vacuo, wanting support or counterpoise, it will sink and be depressed. A cannon-ball and a humming bird's feather will drop in vacuo in the same time, which is not the case in the open air.

Every movement is the result of two forces; the influence of gravity, and the resistance of the surrounding medium. The butterfly, says M. Petin, with its four wings stretched out, lies in a horizontal plane.—When it wants to move forward, it partly closes its wings, and disposes them like a wedge or an inverted roof. Its body then is barely supported by the hind upper wings, it glides along the inclined plane. It would fall, like an unskilled swimmer, head foremost, if it should persist in this position, but it expands again its fore-wings, rests them upon the air which uplifts it and moves forward. Again it closes its fore-wings, and glides downward to rise again. The flight of the butterfly is nothing else than a succession of sliding movements up and down inclined planes. To create these inclined planes at pleasure in the air is the basis of this locomotive system, and this he thinks he has succeeded in doing. This much we must say, however, that there should be no comparisons made between water and the air as mediums for locomotion. The nature of the two is altogether different; the one is compressible and is agitated for miles in depth by a storm, the other is not compressible; there are no currents created by winds in the ocean.

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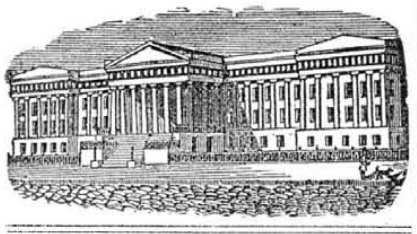

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 6, 1852

LOCK—By Albert Betteley, of Boston, Mass.: I claim, first, holding the tumblers rigidly, so that they cannot be moved, when the key-hole is exposed by means of a cam placed on the same shaft with the cam which moves the bolt.

Second, I claim so arranging the tumblers with the key, that the tumblers will form themselves into the right position, so that the bolt can be withdrawn by dropping by their own weight, or being pressed by springs upon the keys, as described.

SAW MILLS—By Wm. C. Bronson, of Erwin, N. Y. I claim the construction of a saw-frame or gate of metal tubes constituting the guides, as well as the uprights of said frame and cross-pieces, or heads, united to said uprights in the manner set forth.

I also claim the arrangement of the cross-hooked bar and hooks on the ends of the saws, in combination with the sustaining side bars and upper open plate, for the purpose and in the manner substantially as set forth.

[We believe this is a good improvement. See engraving in No. 48, Vol. 6.]

SPINNING BAIT FOR CATCHING FISH—By J. T. Buel, of Whitehall, N. Y.: I claim, first, constructing a bait with an air-tight chamber, which chamber is provided with an aperture or apertures for the admission of air, when fishing light, near or on the surface of the water, and for the admission of water when it is desired to fish deep under the surface of the water, substantially as specified.

Second, I do not claim passing the line through a cork or float, that the float may move freely upon the line; neither do I claim attaching a spinning bait to the line by means of a swivel,—but I claim passing the line through a tube in the body of a spinning bait, substantially as described, to enable the bait to twirl freely, without twisting the line.

STONE CUTTING MACHINES—By John W. Cochran, of Williamsburgh, N. Y,: I claim, first, cutter jaws or their equivalent, combined with and carrying a cutter across the stone, in the segment of a circle, the cutter being so set that the part of its periphery in contact with the stone, when cutting, inclines towards, and the part of the periphery opposite thereto, from the axis or centre of motion of the cutter jaws.

Second, the application of revolving cutters to dressing stone, moving and cutting in a curved line across the stone, and on a convex edge of the undressed portion of the surfaced formed by the line of cut, and cutting towards the centre of motion of the cutters in such curved line.

Third, the combination of a rock shaft with cutter jaws to carry the cutters over and clear from the undressed portion of the stone, substantially as described and set forth.

Fourth, the combination of the rock shaft, guide table, and friction rollers and their equivalents, substantially as described and set forth.

Fifth, the combination of the rock shaft and cam and roller, to produce the rocking or trembling motion, substantially as described.

[This is a most excellent improvement.]

APPARATUS FOT CLOSING DOORS—By M. T. Cooper, of Ballston Spa, N. Y.: I claim the combination of the heavy roller upon a vibrating arm, with the turning railway or inclined plane, the former attached to the door and the latter to the casing, and the whole operating substantially in the manner and for the purpose described.

HORSE COLLARS—By H. B. Latham, of Huntington, N. Y.: I claim, first, the spring and staples to connect the upper ends of the hames, as described.

Second, I claim so constructing and fitting the collar and hame, that the hame shall work or slide on the collar, by any jerk or lurching of the harness, for the purpose of relieving the animal—said collar and hame being fitted with the rivets or their equivalents, to allow the one to slide on the other, and being connected by the bolts, or their equivalents, as described.

ATTACHING ROSES FOR KNOBS TO DOORS, etc.—By Nathan Matthews, assignor to Richard Edwards, D. A. Morris & Nathan Matthews, of Pittsburgh, Pa.: I do not claim the mere employment of a dovetail joint for securing the circle plate in its place; but I claim the combination, substantially as described, of the circle plate, having dovetails on its inner face, the dovetails which are fast on the door or other object, and the shank or socket of the knob, or what is equivalent, any spindle or shaft attached to the knob or handle.

COAT FORMS—By Wm. B. Olds of Meriden, Ct.: I claim the bow in form, substantially as described, suspended by a shank at a point distant, horizontally, from its vertex, on a pivot, or its equivalent, which is stationary in a bracket, or any suitable standard, or pendant, so placed or constructed as to allow the bow to turn round in any direction, as set forth.

MOTH TRAPS TO BEE HIVES—By E. W. Phelps, of Newark, O.: I claim the peculiar construction of the moth traps as described, composed of a slide having the centre groove and two side grooves, and the metallic hinged cover arranged as set forth.

BUTTONS, STUDS, etc.—By David Rait, of New York City: I claim making a stud, button, or other similar fastening, or article of jewelry, in two parts —one part carrying a tube, and the other part, with two snap springs, operating in the manner substantially as set forth.

[This is a very simple and convenient improvement. The patentee is a manufacturing jeweller at 375 Broadway.]

SMUT MACHINES—By Daniel Shaw, of Cheshire, O.: I claim the offset, that is to say, enlarging the space of the hollow trunk on the opposite side thereof, from that at which the grain is admitted, in combination with the screen, spout, passage, and valve, for taking the dust, etc., into the fan case, whereby the cheat and light grain which will pass up the spout with the impurities, is effectually separated and delivered through the spout, substantially as set forth.

IMPROVED HARPOON—By J. D. B. Stillman, of New York City: I do not claim making the flukes separate from the point, or causing the latter to enter deeper than the former, into the body of the whale: but I claim the combination of the sliding and unlatching flukes with the lance, and the lines, or their equivalents, by means of which the point is driven deeper by the drag, or traction on the line, substantially as described.

MECHANISM FOR ACTUATING AN ADJUSTABLE ECCENTRIC—By Mathew Stubbs, of Cincinnati, O.: I claim the described devices for the adjustmeut of an eccentric sheeve, that is to say, the sheave stock arranged so as to traverse a bed plate, at right angles to the shaft, or axle, and operated by a hand bar through the medium of suitable levers and yoke connects with a sliding collar, from which projects a rack which gears iuto a pinion upon the screw which actuates the sheave; and this I claim, whether or not the same be combined with the vibrating arm and shifting pin, as for variation of the throw.

GRAIN SEPARATORS—By John Thompson, of Chili, N. Y.: I claim the novel arrangement for separating the grain from the straw, by which the slats provided with teeth, have a rotary and lateral motion, said motion produced, substantially, as described, or in any equivalent manner, in combination with the inclined slats, whereby, by their combined action, the grain is perfectly and rapidly separated from the straw, operating in the manner and for the purpose set forth.

BOOT JACKS—By Sardis Thomson, of Hartsville, Mass.: I claim, first, the heel gripper and stirrup, in combination with the lever, to draw the stirrup over and hold the toe of the boot, in the manner and for the purpose set forth.

Second, I claim the movable heel gripper, in combination with the connecting rod and stirrup, constructed, and operating, substantially the same as described.

SEED PLANTERS—By Jesse Urmy, of Wilmington, Del.: I claim the jointed tooth attached to the beam in combination with the swivelling bifurcated spout, to direct the corn, as specified, for ribbed seeding.

I also claim the combination and arrangement of the counter with the clutch, as described, so that the counting shall stop when the seed is not delivered.

I also claim the finger register and its appurtenances, as described, for regulating the quantity of seed delivered.

I also claim, in combination with the seeding apparatus, the pulverizer for guano, &c., constructed and arranged as set forth.

RAILS AND CAR WHEELS—By John Valentine, of New York City: I claim the guide wheels, in combination with the rail, constructed as described, and the carrrage, said wheels having their circumferences bevelled so as to expose two surfaces to roll upon, one to project against the side of the rail, and the other to come in action upon the surface of the inner strip, forming part of the chair; when the guide wheels become burthen wheels, as described, the whole being constructed and operating substantially as set forth.

RE-ISSUE.

FURNACES FOR SMELTING IRON ORE; Patented originally Oct. 31, 1839—By J. A. Roth, of Philadelphia, Pa.: First, I do not claim the increasing of the draught as separately by itself.

Second, I do not claim to generate steam, or to heat the blast by waste heat, otherwise than claimed; I therefore only claim the arrangement of the fire chambers, opening each by a flue into one horizontal flue, in combination with the boiler plate in said flue, for generating steam, and the pipes therein, as a means of heating the blast; the whole being constructed and operating as described.

[In the above short list of patents, granted last week, we have the pleasure of recognizing no less than four cases which were secured through the "Scientific American Patent Agency."

Chimneys of Boilers.

A chimney should be constructed with reference to the volume of air it is necessary in a given time to supply to the fuel. The area of the chimney requires to be such as will allow the products of combustion to pass away in such a period as will let the requisite quantity of air go into the furnace in a specified time. A pound of wood requires about 4½ lbs. air for its combustion. It is therefore necessary that if 10½ lbs. of wood are consumed every hour, or during any period of time to produce steam equalling in amount one horse-power, that the chimney will have to be of such a capacity as will allow all the carbonic acid gas to pass away, or to make it more plain, call it 47½ lbs. of rarified air. Now, the question, "what should be the proper height of the chimney, its area, &c., for every steam boiler" are not thoroughly understood, or why would there be such a variety of opinions among engineers on the subject, as has been proven by the evidence adduced in the case of "the Wheeling Bridge and long chimney steamboats." The following are the rules for chimneys laid down by "Bourne:"

"If 200 cubic feet of air of the atmospheric density are required for the combustion of a pound of coal, and 10 lbs. of coal per horse-power per hour are consumed by an engine, then 2,000 cubic feet of air must be supplied to the furnace per horse per hour, and the area of the chimney must be such, as to deliver this quantity at the increased bulk due to the high temperature of the chimney when moving with the velocity the rarefaction within the chimney occasions, and which is usually such as to support a column of half an inch of water. The velocity with which a denser fluid flows into a rarer one is equal to the velocity a heavy body acquires in falling through a height equal to the difference of altitude of two columns of the heavier fluid such as will produce the respective pressures; and, therefore, when the difference of pressure or amount of rarefaction in the chimney is known, it is easy to tell the velocity of motion which ought to be produced by it. In practice, however, these theoretical results are not to be trusted, until they have received such modifications as will make them representative of the practice of the most experienced constructors. Boulton and Watt's rule for the dimensions of the chimney of the land engine is as follows:—Multiply the number of pounds of coal consumed under the boiler per hour by 12, and divide the product by the square root of the height of the chimney in feet; the quotient is the area of the chimney in square inches in the smallest part. A factory chimney suitable for a 20-horse boiler is commonly made about 20 inches square inside, and 80 feet high, and these dimensions are those which answer to a consumption of 15 lbs. of coal per horse-power per hour, which is a very common consumption in factory engines. If 15 lbs. of coal be consumed per horse-power the total consumption per hour in a 20-horse boiler will be 300 lbs., and 300 multiplied by 12=3,600, and divided by 9 (the square root of the height) =400, which is the area of the chimney in square inches. It will not answer well to increase the height of a chimney of this area to more than forty or fifty yards, without also increasing the area, nor will it be of utility to increase the area much without also increasing the height. The quantity of coal consumed per hour in pounds, multiplied by 5, and divided by the square root of the height of the chimney, is the proper collective area of the openings between the bars of the grate for the admission of air to the fire.

In steam vessels Boulton and Watt allow 8½ square inches of area of chimney per horse-power, and in marine flue boilers they allow 18 square inches of sectional area of flue per horse-power; but this proportion appears to be one-third greater than what is allowed by many other makers, whose boilers, however, are scarcely so conspicuous for an abundant supply of steam. The sectional area of the flue in square inches is what is termed the calorimeter of the boiler, and the calorimeter divided by the length of the flue in feet is what is termed the vent. In marine flue boilers of good construction, the vent varies between the limits of 21 and 25, according to the size of the boiler and other circumstances—the largest boilers having generally the largest vents; and the calorimeter divided by the vent will give the length of the flue in feet. The collective area for the escape of the smoke and flame over the furnace bridges in marine boilers is 19 square inches per horse-power, according to Boulton and Watt's proportion.

Crossley's Patent Carpets.

The following is a description of the new style of carpets invented by Thomas Crossley, of Roxbury, Mass, and for which a patent has been granted, the claim of which was published three weeks ago on our patent list, page 222. This description is furnished by the patentee:—

"First. The Patent Ingrain Carpeting is woven plain, without colors or figure, in two or more substantial Plys or layers of cloth, and ingrained or connected together at various points, which is done by causing the warp of one ply or layer at such points to be woven in and become a part of the other ply or layer.

By thus Ingraining together the several plys of cloth, great strength and firmness is given to the fabric. And generally the nearer such points of ingrained cloth come together, the better may the carpet be expected to wear. In the patent ingrain carpeting this ingraining occurs at short intervals.

In ordinary Ingrain Carpeting, the Ingraining or connecting together of the several plys is regulated wholly by the kind or size of the figure woven, as for instance, in large figures where the several objects combined to make up the pattern are bold and striking, there will be found great quantities of plain or open cloth in sections of considerable size when the several plys of cloth are not at all connected together.

This absence of Ingraining is wholly unavoidable, as when the Pattern is woven the contrast between the figure and the ground cannot be preserved but by keeping the colors of the several plys, and therefore the plys themselves entirely separate. Hence people generally prefer small figures to large ones, owing to the greater amount of ingraining, and consequently of service contained in the former over the latter.

Secondly. The cloth after being sheared and dressed, receives the pattern and colors from blocks or rollers, upon one or both sides. When both sides are figured, the back or under surface is stamped first with one style of pattern and colors, and the face or upper surface with an entirely different style of pattern and colors,—giving a variety of style never before obtained in any other kinds of carpeting.

Another new and important feature in the Patent Ingrain Carpeting is discovered in the fact that the colors stamped upon one surface do not appear through on the other side. This is prevented by the peculiar construction of the cloth. No other fabric of woolen, or where wool is a component part, has ever been printed upon one side, without more or less showing through upon the other surface."

[We understand the invention completely by the claim; but those of our readers not acquainted with the manufacturing of carpets could not; this description of Mr. Crossley will be interesting to them. Common two and three ply carpets are exceedingly dear, considering the coarse and miserable texture of them. This is owing to the difficulty of making them. They have to be wove by pattern on the Jacquard machine, and are very expensive to make in all their details. This improvement will furnish us with carpets having duplicate designs—one on each side—and the carpet will be woven much closer if not, it will afford the public no benefit, as the colors of common carpets are differently blended on each side. This carpet is printed like a book or newspaper; we have never heard of carpets being so printed before, and must consider it a great improvement. We suppose that Mr. Crossley washes his carpets after they are printed to remove any surplus acid in the colors. This will render them superior when dried, pressed, and finished, to other three ply carpets, as by these processes the carpets will be semi-fulled and rendered superior in quality.

Loss of the Amazon.

The commissioners appointed by the British government to enquire into the cause of the burning of the Amazon, have made a report. It states that they cannot account for the fire, but that they attribute the loss of so many lives, to the efforts of the officers to subdue the flames, instead of first taking measures to save the lives of those on board. They recommend that every steamship should have force pumps to be worked by hand, as well as those which are worked by the engines. The very thing invented by a correspondent on page 223, this Vol., Sci. Am., and for which our Patent Office refused a patent.

Important to Merchants and Pilots.

Judge Kane has decided that a vessel and her owners are not liable for injuries done by her collision with another vessel, if she has a pilot on board; but that the pilot is responsible for any damage done to other vessels, by collisions while he is on board. Judge Kane decided that the pilot is not the servant of the owners, as the law compels them to take him on board, and that they are not responsible for his neglect, misconduct or want of skill. This is an important decision, and will render legislative action desirable to increase the security now required to be given by pilots for their good conduct and the faithful discarge of their duties.—[Phila. Ledger.

Fresh Water on Shipboard.

It is stated that a very important step has been taken in the British navy to secure a supply of fresh water at sea. A compact distilling apparatus has been adjusted to the cabooses, whereby, with the usual, or little more than the usual expenditure of fuel, a full daily supply of sweet, wholesome water is procured for the ship's company. A similar apparatus, it is said, has been applied to one of the Philadelphia steamships.

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TO CORRESPONDENTS.

J. S., of Geo. —All our steamships have pipes so arranged that, by turning a cock, the water is let on to hose and worked by the engines like the feed pump; this is for the purpose of preventing accidents by fire, &c.

W. H. J., of N. C.—You cannot miss it if you employ the Conger wheel; you had better communicate with him in regard to particulars.

N. B. V., of Pa.—Your plan of wheel is not new, oblique paddles are well known, and a model similar to your sketch was in our possession some two yeals ago, left by a person belonging to Lynn.

J. T., of D., C. W.—We understand your watermotor completely; we are sorry that you did not inform us before you commenced to construct it: the apparatus is more than 2000 years old, we suppose; it is not so good as a water wheel; it will need frequent repairs, and it has six times the friction.

W. D. W., of Mich.—We have seen such an apparatus as you speak of, for indicating the number of revolutions made by a wheel, but we know not where they are made.

T. W. S, of Ohio—We see no objection to your suggestions about ventilation, and hope you may find it convenient to test it fairly.

T. W., of Ga.—The book which you ordered cannot be sent by mail. We will retain it for you subject to your order.

H. & R. F., of Pa.—An application is now pending before the board of examiners, at the Patent Office, for precisely the same arrangement for preventing cars from running off the track as you suggest.

S. K., of N. Y.—The idea of constructing capacious iron cylinders and depositing them at the bottom of rivers, to be used as a tunnel through which to admit of a road-way has been suggested before you. There is a plan now contemplated for connecting France and England by railroad, through a tunnel constructed ou precisely the same plan as you mention.

W. E. L, of Ohio—Your invention is not required in such a city as this; you cannot discharge but an exceedingly minute quantity of water from the syphon above the water line, this quantity is due to the excess of pressure on the long leg. We could not tell how profitable it might be, for patents depend a great deal on the way they are managed. If you think you could make it pay, you might secure it by a caveat.

H. S., of N. H.—It is an old plan of raising vessels by inflated bags of air.

L. M., of ——.—In advocating a monument for Robert Fulton, we sincerely expressed our own feelings There is a line of demarcatiou, which the christian must beware of stepping over, in denouncing things which do not square with his opinions.

C. L. A., of D. C.—We believe that the air tube to convey mails great distances is impracticable.

J. K., of C. W.—We could not speak personally of the economical value of the presses for making brick by great pressure, we only know that such machines are employed, and have been highly spoken of; Starbuck & Co., machinists, of Troy, N. Y., has made a number of them; they can inform you about them if you write.

H. P. B., of Ind.—Your kind words cheer us, and incite us to labor more assiduously still for the propagation of useful knowledge. Those who appreciate the Sci. Am., are, like yourself. of a higher than common class of intellect.

Money received on account of Patent Office business or the week ending April 10:

M. H F., of Ct., $40; S. & H., of N. Y., $55; C. F. B., of R. I., $35: J. T., of N. Y., $30; H. & R. F., of Pa., $20; A. B., of O., $20; H. B, of Ct., $20; P. & M., of Vt., $27; R. E. L., of Ill., $55; W. T. R., of Ct., $22; F. W., of Pa., $30; D. K. & K., of Pa., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending April 10:

F. & A., of Mass.; W. S., of N. Y.; H. & R. F., of Pa.; W. B. L., of N. Y.; S. B., of N. Y.; F. W., of Pa.; D. K. & K., of Pa.

Literary Papers.

We have entered into an arrangement with the publishers of the "American Model Courier," of Philadelphia, and the "American Union," of Boston, which will enable us to furnish either of the two, with the Scientific American, for $3 per annum. They are literary journals of the first order, and are widely circulated in all sections of the country.

☞ Parties cannot be allowed an addition of one of the Literary papers, as above, by remitting a single dollar after paying their year's subscription to the Scientific American; neither can they be permitted to avail themselves of the above conditions for a less term than a full year, and on the precise terms advertised. Money received under other circumstances will be credited in continuance of the Scientific American.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

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☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

COTTON MACHINERY FOR SALE—Two Spinning Ring and Traveller Filling Frames of 264 spindles each; also one Grinding Machine—all of the best quality and in good order; can be seen at the store house of Messrs. B. Carpenter & Co., Newburgh, where they are packed in boxes ready for transportation, and will be sold low to close a concern. Apply at Leonard's Machinery Depot, No. 109 Pearl st., N. Y. THOS. W. CHRYSTIE,
1* Newburgh.

MECHANICAL DRAWINGS—J. H. BAILEY draughtsmen, agent for the sale of patent rights inventions, machinery, &c.; office No. 5 Tryon Row, Harlem Railroad Buildings, opposite City Hall. 31 2*

AMERICAN RIFLE—John R. Chapman's work on the American Rifle, bound in muslin, price $1,25, can be obtained of D. Appleton & Co., 200 Broadway, New York, through the agency of any country bookseller. The Treatise comprises the theory and practice of Rifle Making and Rifle Shooting, and is intended to benefit the enquiring mechanic and marksman. 31 2*

PORTER'S PATENT GRADUATING Tuyere, illustrated in the Scientific American of Sept. 6, 1851, is the only Tuyere known that can be instantly adapted the smallest fire desired or the most powerful blast. Warranted to give satisfaction; will last for years, saves from 25 to 50 cents per day, in time and coal, to each forge. All orders from any of the New England States must be addressed to J. W. & N. S. HOARD, Providence, R. I. 1*

FOR SALE—A new and complete set of Counter Twist Speeder Patterns, the owner having no use for them, will sell them very low. For particulars apply to GEORGE POE, Ellicott's Mills, Maryland. 31 2*

STEAM ENGINE FOR SALE—One of Hoe's upright square Engines for sale, of about five horse-power, price $150: can be seen running daily. Apply at 47 Dey st., N. Y., in the rear, to C. H. ANDRUS. 31 2*

STATE AGRICULTURAL WAREHOUSE—LONGETT & GRIFFING, dealers in Agricultural Implements, No. 25 Cliff st., (near Fulton), New York. Field and Garden Seeds. Guano and other Fertilizers. 29 4*

TO LUMBERMEN—E. H. & S. E. PARSONS, inventors of the Self-straining and Self-ranging Saw Frames, for saw-mills, combining the advantages of both the muley and gate mills and superior to either, reducing the wear and tear to about one-fourth. The saw will bear as much feed, and is as easily kept in order, and is warranted to saw the same amount of lumber with one-fourth less power. They may be seen in sncccssful operation at the Empire Works, Binghampton, Broome Co., N. Y., where they are manufactured, and at Frankfort, Ky., and Cass, Tenn, For further particular address (post-paid) Wilkesbarre, Pa. 29 5*

DRAUGHT BOARDS, PATENT—23 by 29 inches, various scales; also Paper Fasteners, all for quick work, superior to fig. 3 in Sci. Am., No. 2 Vol. 3. $10, with T Rule. Sent by Express, Direct (post-paid) to H. W. CHAMBERLIN, Pittsfield, Mass. 29 4*

MORSE'S AIR DISTRIBUTOR—For Burning Sawdust and Tan to generate steam—no steam saw mill is complete without it. Rights to use it in the State of New York for sale by L. A. SPALDING, Lockport, N. Y.; or JOHN A. CAMPBELL, Buffalo, N. Y. 28 4

PORTER'S GRADUATING VALVE TUYERE—Illustrated in this paper Sept. 6, 1851, gives a sure, quick, and clean heat, and saves full 25 cts. per day to each fire. For sale, wholesale and retail, at No. 9 Gold st. W. J. & J. H. BURNETT. 28 4*

SCHENCK'S MACHINERY DEPOT, No. 64 Courtland st., N. Y.—Has on hand a great variety of Slide and Hand Lathes, Upright Drills, Steam Engines, of 3 1-2 and 6 horse power, and will receive order for engines of any size; Universal Chucks, Iron Planers, White's Patent Lathe for turning Railroad Car Axles, Hand Punches, and Shears; F. Harriss & Son's Smut and Scouring Machines; Fairman's Chuck Lathe for Boring Car Wheels, &c., all of which I will sell as low and upon as accommodating terms as any house in the city.
27 5* SAM. B. SCHENCK.

MORTISING MACHINE.—Dear Sirs: I received the Portable Mortising Machine about 3 weeks ago; I have used it, and am very well pleased with it. it is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851.
This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
MUNN & CO.

STEAM ENGINES AND BOILERS—The patentee is now ready to supply orders for steam engines with Ayer's Patent Improved Boiler of any size required. These boilers occupy but little space, can be set up without brick work, and will make more steam with the same fuel than any other boiler.s A self-acting feeder furnishes a constant supply of water, preventing thereby, in a great degree, the danger of explosion. Where doubts are entertained as to the superiority of these boilers, I will be content to receive for the right one-fourth of the value of the fuel saved by their use. Portable engines furnished to order. E. AYER, Patentee, Norwich, Conn. 26 7*

JOHN W. GRIFFITHS—Ship Builder and Marine Architect, 658 Fourth st., N. Y., furnishes models and draughts of all description of vessels, with the computation of stability, capacity, displacement, and necessary amount of impulsion. Propelling power located and proportionably adapted to the form of the vessel. whether sailing or steaming. Mr. G. also superintends the construction of vessels, and may be consulted upon all subjects pertaining to the various departments of the science or practice of ship building. Draughts forwarded by letter to all parts of the world, and to any desired scale; all letters must be post-paid. 27 13*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD.

BAILEY'S LATHE—For Turning Broom and other Handles, Chair Stuff, straight, swelled, or tapering, warranted to do twice the work of any other lathe. Address L. A. SPALDING, Lockport, N. Y. 28 4

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting entirely the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, are prepared to furnish an article, superior to any made in the United States, (the highest grade warranted to vary less than two minutes in twelve months). Glass dials for illumination furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius." [Jour. of Commerce. 26tf.

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low: also, several of smaller capacity, completely; also, several power plainers, now finishing. Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Ct. 23 10*

TO FELLOE AND SNATH MAKERS—The undersigned having purchased the entire right of A. W. Johnson, for his machine for bending carriage felloes, &c., are now prepared to sell State or county rights for said machine; having used said machine for several years, we know it to be a saving in timber of 30 per cent, and more expeditious. Persons can see one of the machines at work at the manufactory of W. S. Johnson & Co., St. George's, Del.; also felloes of all kinds. Shafts and carriage stuff always on hand, and at prices to suit dealers in the above. WM. G. JOHNSTON & Co.,
22 10* St. George's, Del.

A CARD—The undersigned beg leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to our new and extensive assortment of fine English (Stubbs) and Swiss Files and Tools; also our imported and own manufactured Mathematical Drawing Instruments of Swiss and English styles—which we offer at very reasonable prices. Orders for any kind of instruments will be promptly executed by SIBENMANN & QUARTIER, Importers of Watchmakers' and Jewellers' Files and Tools and manufacturers of Mathematical Instruents, 15 John st. 23 13*

IRON FOUNDERS MATERIALS—viz.: fine pulverized Sea Coal, Anthracite and Charcoal, Black Lead and Soapstone Facings. Iron and brass moulding sand; Core sand and flour; English Fire Bricks for cupolas, &c. Fire Sand and Clay—for sale by G. O. ROBERTSON Liberty place, (near the Post Office) N. Y. 23 10*

TRACY & FALES, RAILROAD CAR MANUFACTORY—Grove Works, Hartford, Conn. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly. 26tf

POST'S PATENT SLIDING DOOR FRONTS—for stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman and Son, 114 John st, N. Y., are general agents. Address, (post-paid) Wm. POST, Architect, Flushing, L. I. 25tf

NEW HAVEN MANUFACTURING COMpany, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 25tf

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
23tf Painters and Chemists.

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, Bridgeport, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 22tf

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped WM. B. PARSONS, and warranted. Samples furnished at the office, No. 187 Water street, New York. WM. B. PARSONS,
14 6m* Sole Proprietor.

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

CHARLES F. MANN, FULTON IRON WORKS, Below the Troy and Greenbush Railroad Depot, Troy, N. Y.—The subscriber builds Steam Engines and Boilers of various patterns and sizes, from three horse power upward; also, his Portable Steam Engine and Boiler combined, occupying little space, economical in fuel, safe, and easily managed; Double Action Lift and Force Pumps; Fixtures and Apparatus for Steam or Water; Tools for Machine Shops; Shafting and Pulleys for Factories. Brass Castings and Machinery made to order at short notice. Steam engines furnished cheaper than can be had elsewhere, of the same quality. 30tf

N. G. NORCROSS'S ROTARY PLANING MACHINE UNEQUALLED—This machine took the first medals awarded to Rotary Planers at the Fair in Boston and at the American Institute, in the Fall of 1850. The Circuit Court. in the Eastern Circuit, held at Boston on the 24th Feb., before his honor Judge Sprague, decided, after a long and tedious litigation of two years, that the Norcross Machine does not infringe the Woodworth Patent; this was on a motion for a permanent injunction, which was refused without ordering a jury trial. Rights to use this patent are for sale by N. G. NORCROSS, Lowell, Mass. 29 8*

IMPORTANT TO IRON FOUNDRIES—The Galvanic Alloy Manufacturing Co., Nos. 401, 403, and 405 Cherry st., N. Y., will furnish the Aerostatic Fan Blower at $55, and with patent fitting at $65, that produce sufficient blast for the longest cupola, melting 3 and 4 tons of iron per hour; taking less than one half the power of those now in use, that cost from $80 to $100. The wings, being only about an inch in width (planned upon entirely new and mathematical principles), produce double the blast with half the power of other blowers. Warranted in all cases, or they may be returned and the money refunded. 29tf.

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis.
15 20*

1852 TO 1856.----WOODWORTH'S PAtent Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 26tf

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SCIENTIFIC MUSEUM.

Agricultural Science.

On the Application of Lime to Grass Land.—When we consider the vast quantity of lime that is removed by a crop of grass, it seems reasonable to suppose that some means ought to be taken to restore that element to the soil, if the soil does not already contain a sufficient amount. Two tons of red clover will carry off 130 lbs. of lime—two tons of rye grass 33 lbs. This is from an analysis by Professor Johnston, whose high authority cannot be doubted; and from analysis we find all grasses to contain lime in large proportions, especially clovers and lucerne. Although the quantity of lime appears a great deal carried off by these crops, yet very small when compared with the weight of the soil, as one cubic foot weighs about 80 lbs.; and the presence of a much greater quantity of lime is necessary to be present in the soil than what is actually required by the various crops, as the roots of feeding organs do not come in contact with the hundredth part of the soil. The clear glassy part of the stems of grass is composed of a silicate of potash or a silicate of soda; and in the absence of either of these substances lime in contact with sand or flint will render it sufficiently soluble to enter into the organism of plants, and will also set at liberty matters that have been taken up in the soil, and quite unfit in that state for the food of the plants. If grass is not carried away in the shape of a crop of hay, but is used as a pasture for milk cows or growing stock, still a great amount of lime is removed by those animals; 100 pounds of bones contain above 57 lbs. of lime. Milk, too, carries off carbonate and phosphate of lime in great abundance. Yet it must be remembered that there is a marked difference between the full grown animal and a young or growing one; the former excretes carbonate and phosphate of lime in its liquid and solid excrements, whereas nature has so organized the young animal, that the greater part of the lime eaten in its food is assimilated for the growth and extension of its bones; if such were not the fact, how could bones possess the immense quantity of lime in their composition? So, even by this means, the soil becomes deficient of lime, if all the excrements of such young animals were returned to it; if such soil did not contain a sufficiency of lime, which there is much reason to doubt, as crop after crop removes lime, and lime is seldom appl ed as a dressing for grass land; and certain it is that we cannot arrive at anything like accuracy in the absence of analysis; and practical experimenters and farmers will do well to consider this.

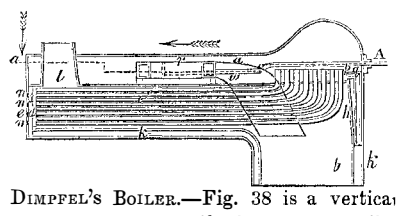
A Mr. Wetherly, an English farmer, who has experimented largely with lime, states that the fall is the best time to apply lime to land, as it exercises its most beneficial influence in the winter months. That which contains the greatest amount of the pure carbonate of lime, is the best. About three tons are applied to the acre. It is slacked and spread evenly over the land as quick as possible. Its use should be regulated as to the kind of crops. Potatoes are much benefitted by its use; 9 tons, with their tops will take from the soil 270 pounds of lime—45 tons of turnips, with their tops, will carry off 140 lbs. of lime; hence the benefit arising to turnip crops from the use of bones, from the fact of their supplying lime, in addition to the organic constituents.

Relative Value of Lime, Ashes, and Guano.—To the friend at Alexandria, who asks us to state "our opinion as to the relative value and effects of 100 bushels of ashes, the same of lime, and of 400 weight of guano, on an acre of land," we reply, that these manures are different in their natures and properperties,—the two first being mineral, and the latter animal manure—that the effects of the two former would be more lasting, the letter more active and productive of immediate good results, though not so permanent,—that the two former, however, would have to be aided by organic manures of some kind, as neither could, of itself, furnish the nutritive food to the plants. If the soil, however, abounded in vegetable and animal remains, they would render them available by decomposing and preparing them to be imbibed as food by the plants.

To produce immediate and lasting effects, it would be well to mix 200 lbs. of guano, and 1 bushel of salt, intimately together, per acre, broadcast, plow the mixture in, harrow, then spread 50 bushels of ashes per acre, and harrow in. Except the price of the additional labor, the cost will be about the same as for 400 pounds of guano, while its good effects would be much more permanent.—[American Farmer.

On Boilers.---No. 19.

Fig. 38.



Dimpfel's Boiler.—Fig. 38 is a vertical longitudinal section of the locomotive boiler of F. P. Dimpfel, of Philadelphia, and patented on the 16th July, 1850. *a* represents the external shell of the boiler, which may be of any desired form, and *b* is the fire chamber. Within the shell is arranged a series of water tubes or pipes, *c*, which are secured at the back end to a vertical plate, *d*, which plate is at such a distance from the end plate or head, *e* of the boiler, so as to have a space, *f*, for the free admission of water to this end of the tubes or pipes.

The other ends of the said tubes or pipes are curved or bent upwards, and attached to the roof or crown plate, *g*, which runs back to, and is connected at the back end with the plate, *d*, before described, and at the front end with a vertical plate, *h*, or lining of the furnace, and at the sides with the upper edges of a plate, *i*, within the boiler, and at such distance from it as to leave a water space all around, and communicating with the space, *f*, at the back end, and with the water space, *k*, surrounding the furnace. This plate, *i*, together with the roof or crown plate, constitutes the fire-flue, which leads from the furnace to the chimney, *l*, so that the flame and other products of combustion, in passing from the furnace to the chimney, act first on the curved or bent-up part of the tubes or pipes, and then, in passing towards the chimney, act on and impart heat to external surface of all the water tubes or pipes, the most intense heat being applied to the curved or bent ends of the tubes which first receive the action of the heat. The products of combustion also heat the plate, *i*, which is the inner shell of the water space surrounding the flue, and which constitutes the water bottom. The tubes being bent or curved upwards, as the water in them is heated and rarified, it will tend to rise in the curved end, and thus establish a rapid circulation through the entire length, and as their other end is connected with the body of water at the back, and where the water is not heated to so intense a degree, the circulation in the tubes or pipes will be fully supplied. The water space between the plate, *i*, and the outer shell of the boiler, as well as the space, *f*, at the back, are closed at the top from the back to the space, *k*, around the furnace or fire-box, and the crown plate or fire roof to which the bent-up ends of the tubes are attached, is surrounded by a rim, *p*. Two or more tubes, *q*, form communcations between the space above the crown plate and the lower end of the space, *k*, around the fire-box; and this space, *k*, in turn communicates with the space which constitutes the water bottom.

The effect of this arrangement will be that, as the water above the crown plate or fire roof cannot pass down the side or back spaces, it will run down the tubes, *q*, to the bottom or lower part of the spaces, *k*, surrounding the furnace or fire-box, and thence through the water bottom to the space, *f*, to supply the circulation in the tubes. The current thus supplied to the space, *f*, which cannot rise above the covering of the said space by reason of its being closed up at top, will effectually supply the tubes, for if the said space were open at top, and not connected with the water bottom, the heat which the plate, *d*, receives from the impingement of the products of the combustion in passing through the flue, would have the effect to repel the water from the surface of the plate, and to induce an upward circulation in the said space, *f*, so rapid as not to give an adequate supply of water to the tubes.

And as the curved and bent up ends of the tubes are either directly over or nearest the fire chamber, they will be more highly heated than the rear ends, so that the water, by its circulation through the tubes or pipes will move in a direction the reverse of the current of heat, as it passes from the fire chamber to the chimney, thus increasing the absorption of heat by the water.

The bent-up ends of the tubes are extended above the roof or crown plates, as at *m*, which will induce a more rapid circulation, and avoid the agitation of the water on the surface of the roof around the tubes.

The shell of the boiler at the horizontal end of the tubes or pipes may be perforated as at *n*, with a series of holes, corresponding with the bore of the tubes, for which one large hole for the whole series, covered with a plate in the manner of a man-hole, may be snbstituted, for giving access to the tubes or pipes, for cleansing or repairing them.

A short distance above the top flue-plate there is a cylinder or case, *r*, provided with a reciprocating piston, the rod of which passes through the head of the boiler, that it may be connected with any moving part of the engine or any other first mover, to give it a reciprocating motion. The said cylider is provided on one side with two induction valves, one at each end, and on the other side with two eduction valves discharging into a pipe leading down into one of the outer spaces. It will be obvious from this, that the reciprocating motion of the piston will produce a current of water down the water space in which the pipe is located, and that this will induce a circulation through the boiler, to return the water to the induction valves of the cylinder, and in this way establish a circulation of the water over the heating surface of the boiler with a velocity dependent on the capacity of the cylinder and the motion of the piston.

Experiments at Washington.

Some experiments at the Washington Navy Yard have been made, which would seem to establish the unfitness of iron as a material for the hulls of vessels of war. A condemned iron vessel was procured, an eight-inch shell was fired at her from a 56-pounder gun, at a distance of three hundred and fifty yards.—The shell went clear through both sides of the vessel tearing large ragged holes, much larger than the diameter of the shell, and too irregular for plugging, and scattering small and jagged fragments of iron, which, in an action, would be likely to prove more dangerous to her own crew than the shot from an enemy's battery. Another shell fired at her wooden bulwarks made only a clean round hole.—[Exchange.

[The Washington experiments are certainly two years behind the age. The unfitness of iron for war vessels was fully proved two years ago in England by experiments made at Portsmouth, (see page 368, Vol. 5, Scientific American.)

Source of the Nile.

At the last meeting of the Bombay Geographical Society, a paper was read by Mr. John Smith, on the discoveries made by the East African missionaries of what appear to be the sources of the Nile. This mysterious river is said to arise from two lakes, one of which is of great dimensions nearly under the Line, and they seem fed by the melting snows of the gigantic range, which rises to the altitude of 22,000 feet at least, close by. The description of this long-looked-for locality coincides exactly with that given by Ptolemy 2,000 years ago.

Cure for Hiccups.

Dr. Pretty, an English physician, appears to have found a very simple means of arresting the hiccup. It is sufficient to squeeze the wrist, preferably that of the right hand, with a piece of string, or with the fore-finger and thumb of the other hand.—[Philadelphia Bulletin.

[If this is true, it is a most valuable discovery.

Railroad Items.

The Martinsburg (Pa.) Gazette, says the Baltimore and Ohio Railroad are rapidly progressing with their new building, at the depot in that place. This building, when completed, will be one of the largest connected with the road. The Chattanooga Advertiser learns from Mr. Grant, Chief Engineer on the Nashville and Chattanooga Railroad, that the track laying is proceeding at the rate of a mile and a half per week, on the western division. He is confident in the opinion that the road will be open for through travel by November next—connection being made at the river by steamboat. A connection has been secured at Knoxville, Tenn., between the East Tennessee and Virginia railroads. At a railroad meeting held in Lexington (Ky.), recently, Gen. Leslie Combs and John Norton, Esq., delegates to the late Railroad Convention at Nashville, reported, as the result of their mission, the assurance of the certain and speedy construction of a railroad line from Danville to Nashville.

If we suppose the mean depth of the ocean to be two miles, the cubic contents of it will be 290,000,000 cubic miles.

LITERARY NOTICES.

Graham's Elements of Chemistry—Blanchard & Lea, of Philadelphia, have just issued part 1 of the revised edition of this great and eminently distinguished work. The science of chemistry is so progressive, that every elementary work becomes obsolete in two or three years, hence the necessity of new editions every second year or so. This work is now written up to 1852, and is greatly enlarged. Chemistry is a practical science—it is an accumulation of facts developed by experiments; and the knowledge it affords is useful to every man and woman in our land. It is no dry system of sounding inferences, but truthful, needful information for all. We therefore recommend this work heartily and sincerely to our people: it has no superior. It is to be completed in two parts, and is for sale by A. S. Barnes, No. 57 John st., this city.

The American Whig Review, for April, contains an excellent portrait of Hon. A. H. H. Stuart, Secretary of the Interior. It contains the conclusion of an able article on "Journalism and Journalists in Paris," biographical sketches of eminent Whigs, and several literary articles. The Review is ably conducted by Champin Bissell, and is devoted mainly to the promulgation of political views suited to the party whose name it bears. Terms $3 per annum; 120 Nassau st., N. Y.

North American Miscellany, published monthly by Angel, Engel, & Hewitt, No. 1 Spruce street, New York—It is published at $1 per annum, and is decidedly one of the most sterling productions now issued. The second volume commenced with the March number. The same concern also issue the "Household Words," a weekly, at $2.50 a-year, conducted by Charles Dickens, an English author of world-wide celebrity.

We have received from the publishers, Dewitt & Davenport, an auto-biography, entitled "The Life and Adventures of Capt. Armstrong," in which the author gives a detailed and interesting account of the fortunes and misfortunes through which he has passed. Price 25 cents.

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